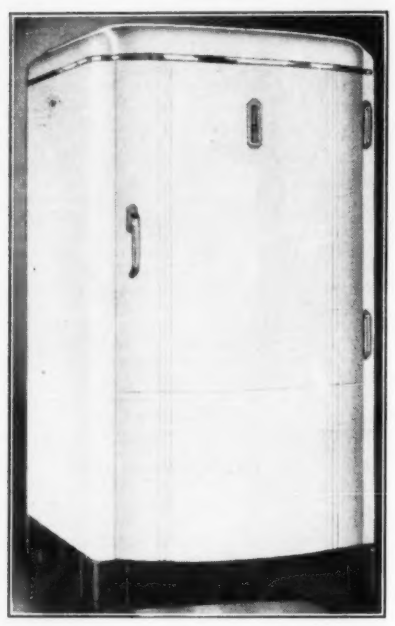
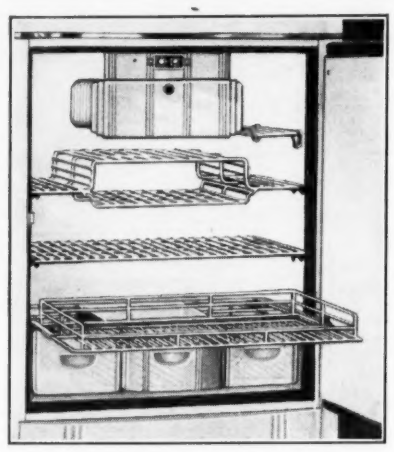
Copeland's 'Grecian Temple'





Interior of the 1936 Copelands is of entirely new design. Evaporator is changed and has decorative door. Note "4-in-1" food file at the bottom of the cabinet.

• • •

Improved 2-Cylinder Compressor Used in Copeland's New Household Line

(*Concluded from Page 1, Column 2*)

pressor through a screen filter, which aids in the natural separation of any oil which has gone through the system.

The oil drops into a cup, and then through a slot in the cylinder wall for transmission into grooves cut into the pistons, to lubricate the pistons and cylinder walls. The oil then drops into the crankcase.

Wrist pins are also lubricated by a similar "slot and groove" design.

Intake valves are located in the piston heads. Discharge valves in the cylinder head are of the reed type.

Other features of the compressor construction include a fan-blade type flywheel, to cool the compressor; balanced-bellows seal; one-piece compressor body; large bearing eccentric shaft, and diamond-bored bearings.

High volumetric efficiency is claimed for the compressor, which has a capacity of 115 lbs. ice-melting effect per 24 hours when operating at 420 r.p.m.

Compressor bore is 1¼ inches, stroke 1⅛ inches. Delco or Emerson motors are used to drive the compressor.

The compressor is compact in size, being only 8¾ inches high. The unit assembly is floated on four combination rubber spring mountings.

Key specifications of the new Copelands are as follows:

Model No.	Storage Capacity Cu. Ft.	Shelf Area Sq. Ft.	No. of Ice Trays	No. of Cubes	Lbs. of Ice	Exterior Dimensions Height	Width	Depth
436	4.5	8.5	3	63	6	54¼	23¾	20¼
736	7.1	14.0	3	98	9	58	30	23
936	9.01	17.4	4	126	11	61½	32¾	22⅜

Hardware Store Opens Refrigeration Dept.

GREELEY, Colo.—Because its 25-ft. wide sales floor did not provide sufficient display space for the electric refrigeration line carried at Hering & Repp's hardware store here, the store owners recently remodeled the basement and front of the store and set up a complete, attractively decorated refrigeration department.

Black walls and ivory-colored ceiling in this basement display room provide a dramatic setting for the refrigerators. Total cost for the remodeling, including the installation of a staircase leading into the new department, was $700.

Latham Reports 100% Gain In Leonard Orders

NEWARK—Orders for Leonard refrigerators received at the dealer meeting held recently by E. B. Latham & Co., were 100 per cent greater this year than last, reports Robert F. Downing, general manager.

Norge Dealer Enlarges Store

SEATTLE—Adding to his present store, J. G. Jonson, electric appliance dealer at 1722 Market St. here, is building his showrooms flush with the street to afford more display room for the Norge refrigerators which he handles.

☐ YES, I need the MASTER SERVICE MANUAL. Send me a copy at once. Enclosed is $3.00.

☐ I want to take advantage of the combination rate. Send me a copy of the Master Service Manual and renew my subscription to Electric Refrigeration News for one year (52 issues) from expiration date. Enclosed is $5.00.

☐ I want to take advantage of the combination rate. Send me a copy of the Master Service Manual, and enter my advance order for the Refrigeration and Air Conditioning Specifications book (to be published in April). Enclosed is $5.00.

Name..... Date.....

Attention or
In Care of .....

Address.....

City..... State.....

Remarks.....
(Indicate products sold or principal line of business.)

Mail to:
Business News Publishing Co., 5229 Cass Ave., Detroit, Mich.

Westinghouse Host To 150 Salesmen

(*Concluded from Page 1, Column 4*)

centage of his quota during 1935.

Mr. Brock is also one of the three directors of the club, the other two being Philip Moewe, M. O'Neill & Co., Akron, Ohio; and Robert M. Serr, Western Public Service Co., Scottsbluff, Neb. The title of director is conferred on the salesman who makes the highest percentage of quota in his class.

"Ranch Superintendents" (those making the second highest percentage of quota in their respective classes) are: H. G. Ratner, Appliance Sales Co., Greensburg, Pa.; G. E. Heiges, Heiges Bros., Sharon, Pa.; and George R. Dane, New Hampshire Power & Light Co., Newport, N. H.

"Ranch Foremen" (those achieving third highest percentage in each class) are: James Connolly, Equitable Sales, Pittsburgh; L. T. Penney, E. W. Penney & Son, Eastport, N. Y.; and Claxton White, White Electric Co., Pittsburg, Calif.

New England District

C. H. Barthel, Stamford Gas & Electric Co., Stamford, Conn.; L. M. Murphy, Burden-Bryant Co., Springfield, Mass.; J. H. O'Neill, Burden-Bryant Co., Springfield, Mass.; N. S. Loveland, Loveland's Bristol, Conn.; A. LaCroix, Alfred LaCroix, Jr., Holyoke, Mass.; Henry Siranossian, Home Appliance Shop, Bridgewater, Mass.; Geo. R. Dane, New Hampshire Power Co., Newport, N. H., and John E. Miller, R. H. White Co., Boston.

Eastern District

L. Holden, Boulevard Appliance Corp., Flushing, N. Y.; J. A. Rissacher, Queens Electric Shop, Long Island City, N. Y.; Harold E. Simoff, Economy Refrigeration, Inc., Brooklyn; Frank Wickham, F. W. Tompkins Sons, W. New Brighton, N. Y.; Wm. Edwards, Electric Servant Co., Yonkers, N. Y.; W. J. Quinlan, F. W. Tompkins Sons, W. New Brighton, N. Y.; L. T. Penney, E. W. Penney & Son, Eastport, N. Y.; Wm. Anderson, Wm. Anderson, Millbrook, N. Y.; Jack Hollins, Edco Co., Brooklyn; J. Feary, Electric Equipment Corp., Newark; Walter Reeves, Hudson Bergen Equipment Corp., North Bergen, N. J.

Sam Fertig, Westmar Sales Co., Perth Amboy, N. J.; Henry Allen, Electric Equipment Corp., Jersey City; R. A. Cooke, R. A. Cooke, Inc., Hackettstown, N. J.; Leo Rayhill, Kempf Bros., Utica, N. Y.; F. H. Shaeffer, Shaeffer Bros. Co., Lockport, N. Y.; A. G. Jung, A. G. Jung, Rochester, N. Y.; Alex F. Jones, Alex F. Jones & Son, Syracuse; H. Mahlon Brown, A. B. Brown & Son, Homer, N. Y.; M. W. Rowe, Quality Appliance Shop, Union, N. Y.; and D. B. Hover, Dow B. Hover, Hudson, N. Y.

Middle Atlantic District

Fred Wolff, Edgar Morris Sales Co., Washington, D. C.; G. M. Jones, Rudolph West Co., Washington, D. C.; Wm. Freytag, John F. Creveling, Easton, Pa.; C. A. Reynolds, M. M. Crockin Co., Portsmouth, Va.; Wm. Atkinson, Wm. Atkinson, Inc., Philadelphia; H. Kandel, H. Kandel & Co., Philadelphia; S. J. Snellenburg, H. Kandel & Co., Philadelphia; R. M. Carson, Hutzler Bros., Baltimore; H. Brener, Treegoob Radio, Philadelphia; G. G. Kahn, Treegoob Radio, Philadelphia; Wm. Warsaw, Hecht Co., Washington, D. C.; C. P. Stearns, Edgar Morris Sales., Washington, D. C.; Herbert Lugg, W. H. Lugg, Duryea, Pa.; and W. J. Brown, District Line Hdwe., Washington, D. C.

Southeastern District

C. Dexter Jordon, Home Equipment Corp., Columbus, Ga.; W. H. Lowman, Broad River Power Co., Columbia, S. C.; A. L. Sain, Pendleton Maytag Co., Greenville, S. C.; Geo. Hall, Lee Valade, Inc., Jacksonville; J. A. Latimer, Clare & Co., Atlanta; and W. E. Bunch, Everett Furn. Co., Ft. Lauderdale, Fla.

South Central District

F. S. Bender, Terrell Electric Co., Chattanooga, Tenn.; L. E. Gray, Modern Home Appliance Co., Birmingham, Ala.; V. P. Parker, Baton Rouge Electric Co., Baton Rouge, La.; A. C. Wade, Wade Electric Co., Florence, Ala.; and F. C. Daniels, Louisiana Public Service Co., DeRidder, La.

Central District

Robert Sofer, Danforth Co., Pittsburgh; James Connolly, Equitable Sales, Pittsburgh; H. Ray, May Stern Co., Pittsburgh; M. A. Mathison, Danforth Refrigeration Co., Cleveland; W. W. Houser, The May Co., Cleveland; E. C. Skeese, Ohio Public Service Electric Shops, Mansfield; G. W. Erdmann, L. E. Tompkins, Inc., Cleveland; H. G. Ratner, Appliance Sales Co., Greensburg, Pa.; A. C. Bolton, Conner Electric Co., Wheeling, W. Va.

M. R. Baker, Service Radio & Electric, Uniontown, Pa.; Philip Moewe, M. O'Neill Co., Akron, Ohio; Wm. Tillman, Wm. Tillman, Covington, Ky.; R. W. Badgero, Walz Hardware, Saginaw, Mich.; H. Carfagna, Electric Shop, Turtle Creek, Pa.; J. H. Ronay, Fairmont Wall Plaster Co., Fairmont, W. Va.; J. A. Godfrey, J. A. Godfrey, Dover, Ohio; G. E. Heiges, Heiges Bros., Sharon, Pa.; J. M. Stephenson, Northern Ohio Maytag Co., Fremont, Ohio; R. C. Pollock, R. C. Pollock, Van Wert, Ohio; and M. Herman, Crystal Park Hdwe. Co., Canton, Ohio.

Northwestern District

F. Gustafson, Beecher-Cumming, Inc., Minneapolis; A. C. Meyer, Beecher-Cumming, Inc., Minneapolis; W. J. Meyer, Beecher-Cumming, Inc., Minneapolis; Paul Nordenson, Beecher-Cumming, Inc., Minneapolis; A. A. Yegge, Modern Appliance Co., Hammond, Ind.; H. G. Meyer, Modern Appliance Co., Hammond; I. Brottman, M. L. Parker Co., Davenport, Iowa; Mark Wilson, Wilson's Electric Co., Gary, Ind.

D. C. Robb, Iowa Electric Light & Power Co., Cedar Rapids, Iowa; Wm. Chandler, Chandler Electric Co., Indianapolis; Wm. J. Shines, Indianapolis Power & Light Co., Indianapolis; Fred Hein, D. S. Stophlet, Inc., Madison, Wis.; L. Faigen, The Motor Inn, Rock Island, Ill; P. E. Doher, Western Public Service Co., Holdrege, Nebr.; R. M. Serr, Western Public Service Co., Scotts Bluff, Nebr.; Chas. W. Foss, Black Hills Radio, Lead, S. Dakota; James Benardis, Hansch & Hill Electric Co., Baraboo, Wis.; H. R. Ayars, Higbee & Keyes Co., North Platte, Nebr.; C. H. Brock, Western Public Service Co., Chadron, Nebr.; and M. S. Watkins, Watkins Refrigeration Sales, Chicago.

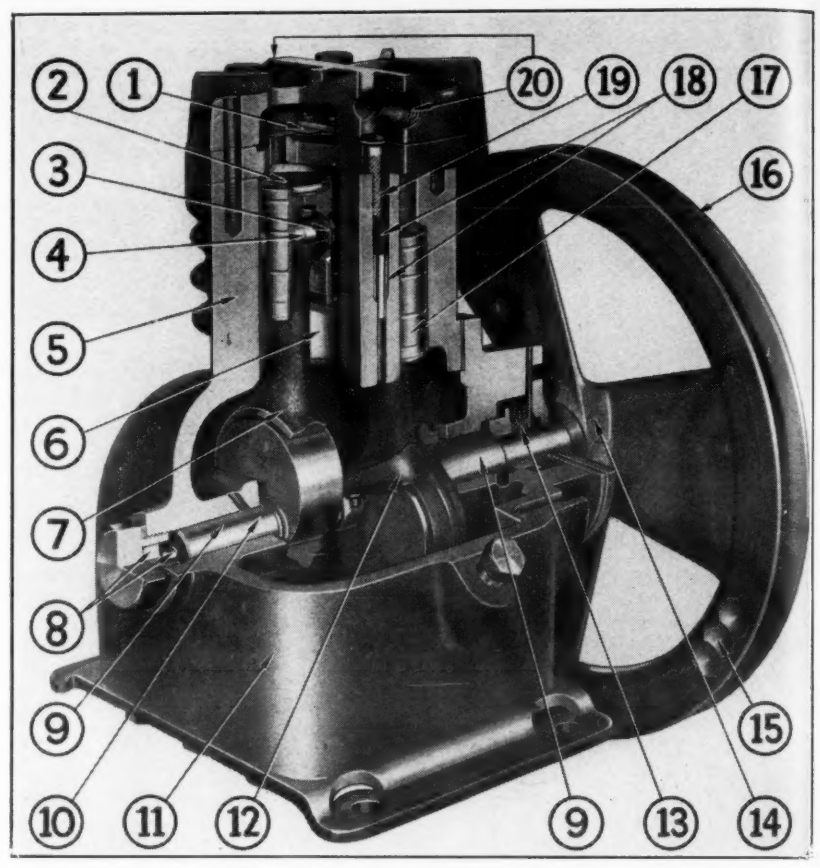
Southwestern District

R. J. Schneider, May Co., Denver; Middleton Stark, F. M. Stark & Co., LaJunta, Colo.; J. C. Hoffman, A. R. Lindburg Co., St. Louis; L. Truesdell, Famous-Barr Co., St. Louis; H. B. Baker, Harris-Goar, Topeka; H. N. Eshelman, Eshelman Music House, St. Joseph; R. A. Wyatt, Wyatt's Electric Shop, Montgomery City, Mo.; Sam Klein, Las Cruces Furniture Co., Las Cruces, N. Mex.; E. Wilson, Better Home Appliance Corp., Harper, Kans.; R. B. Brown, Houston Light & Power Co., Rosenburg, Tex.; J. D. McCarty, Southwestern Gas & Electric Co., Texarkana, Ark.; A. Finger, Finger Bros., Daisetta, Tex.; W. A. Beard, Jr., Gulf Public Service Co., Troup, Tex.; G. E. Paris, Jay G. Paris, Ponca City, Oklahoma; R. W. Byrnes, Houston Light & Power Co., Houston; and J. M. Thompson, Landers Furniture Co., Helena, Ark.

Pacific Coast District

L. R. Spates, Colvin-Templeton, Inc., San Mateo, Calif.; L. E. Minar, Colvin-Templeton, Inc., Oakland; K. S. Newhouse, Hartman Bros., Ltd., San Jose, Calif.; Harry S. Lacey, Maxwell Hdwe. Co., Oakland; C. White, Claxton White Electric Co., Pittsburg, Calif.; H. Chapman, Chapman & Perliter, Los Angeles; W. R. Graul, H. L. Miller & Co., Pasadena; Harlow Alabaster, Southern Sierras Power Co., Coachela, Calif.; J. D. Matlock, Matlock Electric Supply Co., Globe, Ariz.; N. Rubenstein, Rubenstein Furniture Co., Eugene, Ore.; O. Rostad, Turlock Irrigation District, Turlock, Calif.; Joe J. Hon, Hon Electric Co., Boise, Idaho; and Elmer Larson, Turner Hdwe. & Impl. Co., Stockton, Calif.

Furnishes Copeland Refrigeration



Cut-away view of the improved two-cylinder compressor used in the Copeland 1936 line, introduced this week and described in detail on page 1 and this page. Operating at 420 r.p.m., the compressor has an ice-melting capacity of 115 lbs. per 24 hours. Key to the numbered parts is as follows: (1)—Multi-reed discharge valve. (2)—Spring-disc intake valve. (3)—Lubricated wrist pin. (4)—Spring thrust washer. (5)—One-piece body. (6)—Diamond-bored, micro-honed, hand-lapped cylinder walls. (7)—Diamond-bored connecting rod. (8)—Shaft thrust ball with hardened insert and plug. (9)—Diamond-bored oversize bearing. (10)—One-piece drop-forged eccentric shaft. (11)—Extra large crankcase. (12)—Directional oil distributor. (13)—Balanced seal. (14)—Fan-blade type spokes. (15)—Balanced flywheel. (16)—V-belt drive. (17)—Selective fit pistons. (18)—Cylinder and piston oiling system (patent pending). (19)—Suction line screen. (20)—Service valves in head cap.

ECONOMICAL *Refrigeration* FOR THE MODERN HOTEL

★COPELAND★ *Commercial* REFRIGERATION

Economical refrigeration is an important consideration in careful hotel management. Those who buy equipment for the large hotels invariably look to the durability as well as to the performance of the product. In the hotel field more and more buyers are turning to Copeland Commercial Refrigeration because it is so dependable, so economical to operate and so free from service problems. Sell this great line. A few choice territories are available. Write or wire today.

COPELAND REFRIGERATION CORPORATION
Manufacturers of a complete line of Household and Commercial Refrigeration
Holden Ave. at Lincoln . . . DETROIT, MICH.

Copeland
DEPENDABLE Electric REFRIGERATION

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

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Rackliffe Sues Dealer on Macy 'Bootleg' Deal

Distributor Claims Breach Of Contract; Anti-Trust Law Cited by Defense

By T. T. Quinn

HARTFORD, Conn.—As an aftermath of the buying tactics which enabled R. H. Macy & Co., New York City department store, to offer standard models of electric refrigerators to the New York City public at a "6 per cent discount" policy, Rackliffe Bros., Inc., New Britain Kelvinator distributor in this territory, has filed suit in Hartford County Superior Court here against Mayflower Sales Co., Inc., Hartford, charging fraud and breach of contract, and claiming $5,000 damages.

The suit concerns the sale by Rackliffe Bros. of two carloads of Kelvinators to Mayflower Sales Co., the first, totaling 86 units, on Jan. 29, 1935, and the second, totaling 80 units, on March 4 of the same year. According to the bill of complaint filed by Rackliffe Bros., the refrigerators were sold on the understanding that the first carload was to be used in apartment houses in Hartford, and the second for similar installations in New Haven.

Instead, it is claimed, the refrigerators were not used in Connecticut, but were resold, reshipped, and redelivered, either directly or through various intermediaries, to Macy's, for resale to the New York buying public.

In its demurrer to the bill of complaint, Mayflower Sales Co. contends that Rackliffe Bros.' contract as distributor for Kelvinator Corp., in which the company agreed not to sell or install refrigerators outside its own territory under penalty of possible cancellation of its franchise, is in violation of the Sherman anti-trust

(*Concluded on Page 2, Column 3*)

Westinghouse Sales Leaders Visit Plants

By T. T. Quinn

SPRINGFIELD, Mass. — Westinghouse Electric & Mfg. Co.'s crew of Quota Busters, 150 "crack shots" who ranked highest in refrigeration marksmanship during 1935, wound up their three-day tour of the company's refrigeration properties last Wednesday with a visit to the Springfield plant, where they watched the manufacture and assembly of condensing units and listened to addresses on engineering procedure by plant officials.

Welcome to the plant, and to Springfield, was in the hands of a committee headed by L. M. Osborn, manager of the Springfield plant, and Acting Mayor Erhard, representing Mayor Martens, who was unable to be present.

Immediately upon leaving the special train which had carried them from Mansfield, the Quota Busters were loaded into coaches and taken on a tour of Springfield's business district. A guide in each coach pointed out places of interest along the route.

Arriving at the plant, the men were divided into small groups and turned over to a second set of guides, who took them through the three buildings, each one-fifth mile long, in which Westinghouse controls, evaporators, and condensers are made. Plant production is about 850 complete units a day.

First thing the men saw was the control section, in which the controls are tested in cold pots, at 14° differentiation.

Next the men were taken through the refrigerator machine sections, where they first saw compressor hous-

(*Concluded on Page 9, Column 1*)

Tax Payments Show Gain in January

WASHINGTON, D. C.—Mechanical refrigeration manufacturers paid taxes totaling $201,143 during the first month of this year, compared with $162,534 paid during January of last year, according to reports issued by the Bureau of Internal Revenue.

Frigidaire's Price Schedule Is Announced

DAYTON—Suggested cash retail selling prices (Zone 1) for the 1936 line of Frigidaire household electric refrigerators range from $84.50 for the Koldchest model to $526.50 for the "Imperial."

The five-year protection plan on the mechanical unit, for $5, is included in the purchase price.

Following is the schedule of the suggested Zone 1 prices:

Model No.	Suggested Cash Retail Selling Prices (Zone 1)
Koldchest	$ 84.50
D3-36	104.50
DRS-5-36	144.50
DRS-6-36	164.50
Master 4-36	129.50
Master 5-36	164.50
Master 6-36	189.50
Master 7-36	219.50
Super 4-36	154.50
Super 5-36	184.50
Super 6-36	209.50
Super 7-36	249.50
Super 9-36	309.50
WP12-36	379.50
WP15-36	471.50
Premier	436.50
Imperial	526.50

Rodman Joins Staff Of Universal Cooler

DETROIT—C. A. Rodman, formerly air-conditioning engineer for Chrysler Corp., has recently joined Universal Cooler Corp. as an engineer in the commercial sales department, announces T. S. Pendergast, Universal Cooler's commercial sales manager.

Before his connection with Chrysler, Mr. Rodman was chief refrigeration engineer for S. F. Bowser & Co., Fort Wayne, Ind., and previous to that, vice president of Bal-Rod Air Conditioning Corp. of San Francisco.

877 Refrigerators Sold in Cleveland in January

CLEVELAND—A total of 877 electric refrigerators were sold in Cuyahoga County by distributors during January of this year, a decrease of 30 per cent from the 1,265 sold during the same month last year, reports Ralph H. Jones, secretary of the Electrical League of Cleveland.

Stewart-Warner 5-Year Service Plan Optional

Manufacturer Drafts Scale Of Prices to Be Paid to Dealers for Service

CHICAGO — Stewart-Warner Corp. has announced an optional five-year protection plan by which purchasers of 1936 Stewart-Warner refrigerators may obtain four years' service protection, in addition to the standard one-year guarantee, by paying five dollars more than the established list selling price.

Terms of the plan make it optional for dealer and for customer use. In explanation of the policy, company officials claim they believe the dealer is entitled to determine whether he wishes to offer the added service, and that the customer should be given the privilege of buying it or not, as she chooses.

Special feature of the plan is the fixed scale of payments by which the manufacturer will recompense the dealer for any service work which he does on refrigerators sold under the new contract.

Dayton Line Is Made 'Changeable' for Buyers' Desires

BUFFALO—Emphasizing flexibility and merchandising adaptability as the selling points of its 1936 line, Heinz and Munschauer, Inc., manufacturers of Dayton refrigerators, are promoting the new Dayton models as "pusher-lines" to increase store traffic.

The two lines, including 6, 7, and 8-cu. ft. deluxe models, and 4, 5, and 6-cu. ft. standard models, are being featured by the manufacturer as companion lines to nationally advertised refrigerators.

Color variety provided by snap-on metal moulding is one of the "flexible" features of the deluxe models. By this device, the makers claim that the sales appeal of a variety of colors in keeping with the decorative scheme of the customers' kitchens may be had at a minimum dealer inventory.

Dayton cabinets, designed by Fred-

(*Concluded on Page 2, Column 1*)

Servel Distributors Told of '36 Plans at N.Y. Meeting

NEW YORK CITY—What is said to be the first sales conference ever devoted exclusively to commercial refrigeration and air conditioning was held here last Friday and Saturday when Servel, Inc., called more than 100 members of its eastern distributing organization to Hotel Lincoln for a two-day meeting on merchandising and technical problems.

Taking part in the meetings were Harry Newcomb, general manager of Servel's commercial refrigeration division; W. J. Aulsebrook, assistant sales manager; C. L. Olin, manager of the applications department; P. B. Reed, service manager; E. A. Terhune, eastern manager; and A. M. Schmitz, sales engineer.

A banquet Friday night was attended by high Servel officials, including F. E. Sellman, vice president of Electrolux sales division, and Louis Ruthenburg, president of the commercial refrigeration division of the company.

In his speech at the banquet, Mr. Ruthenburg praised the eastern distributors for the splendid showing their efforts had enabled Servel to make last year in the commercial refrigeration field. He urged them, also, to take full advantage of the opportunities that were theirs in the new field of air conditioning. Air conditioning, he said, is not a hope of the future; it is a reality of today.

He advised his listeners to get the proper perspective in relation to this

(*Concluded on Page 13, Column 1*)

3 New Stewart-Warner Distributors Named

CHICAGO — Stewart-Warner Corp. has recently appointed three new distributors, The Stewart-Warner Sales Corp., 816 F. St., N. W., Washington, D. C.; Miller Electric Co., 11 Hopper St., Utica, N. Y.; and C. L. Hartman Corp., 18 Union St., Rochester, N. Y.

George Wasserman is president of Stewart-Warner Sales Corp., which will handle refrigerators and radios.

Miller Electric Co., which will also handle both products, is headed by Grover C. Miller, president; Clarence G. Miller, treasurer and sales manager.

C. L. Hartman Corp. will distribute only S-W refrigerators. Adolph Bastian is president of this concern.

Norge 10-Year Plan Applies to Rollator Only

Covers Replacement Cost; Five-Year Plan for Certain Other Parts

DETROIT—Norge Corp. has announced, effective immediately, an "extended service protection plan" on its household refrigeration unit. In addition to the regular one-year warranty covering parts and service which has been the policy heretofore. Norge is now offering a five-year warranty on certain mechanical parts such as the motor, belt, receiver, condenser, and needle valve—and, a 10-year warranty on the *rollator compression unit only.*

This extended warranty on the parts and on the rollator covers replacement of parts only, the customer paying for any labor involved, Norge officials explained.

No definite decision has been made at this time as to whether an extra charge will be made to the customer for the extended warranty.

The new warranty policy was decided upon after a two-day meeting with distributors held here recently, at which Howard E. Blood, Norge president, explained the results of a survey on service costs.

The new warranty will be announced in national advertising in March, but Mr. Blood claims it will not be emphasized except as one of the features of Norge refrigeration.

Department Store Men To Discuss Selling At G-E Clinic

CLEVELAND — Twenty-five speakers will discuss various aspects of department store merchandising of electrical appliances, at the fourth annual merchandise clinic sponsored by the department store section of the specialty appliance sales division of General Electric Co., to be held March 10 and 11, at Nela Park here.

Speakers who will address the 250 executives and merchandise managers from department stores in all sections of the country who are expected to attend the two-day clinic include:

Col. L. B. Ayers, Cleveland Trust Co.; S. Einstein, G. Fox & Co.; Dr. Charles A. Eaton, Congressman; John Guernsey, Retail Ledger Publishing Co.; Maj. Benjamin H. Namm, A. I. Namm & Son; Lew Hahn, Allied Stores Corp.; Ed Goldstein, May Co.; David Ovens, president, N. R. D. G. A.

Paul Hollister, R. H. Macy & Co.; D. W. Proffitt, Proffitt's Department Store; A. Denberg, Kresge's Department Store; W. L. Stensgaard, W. L. Stensgaard & Associates; Kenneth Dameron, Ohio State University; David Edelmuth, Associated Merchandising Corp.; Robert J. Murray, Murray Co.; Maurice Webb, Strawbridge & Clothier; Borden & Busey, New York University.

W. L. Boege, McAlpin Co.; Richard Roth, Wm. Taylor Son & Co.; J. B. Ogden, and Hershel Lutes, J. L. Hudson Co.; A. J. Pete, The Lion Store; Robert Bond, Allied Stores Corp.; Ell C. Bennett, Electrical Dealer Magazine; H. A. Adamy, Wilkes-Barre Dry Goods Co.; and Philip Salisbury, editor, Sales Management Magazine.

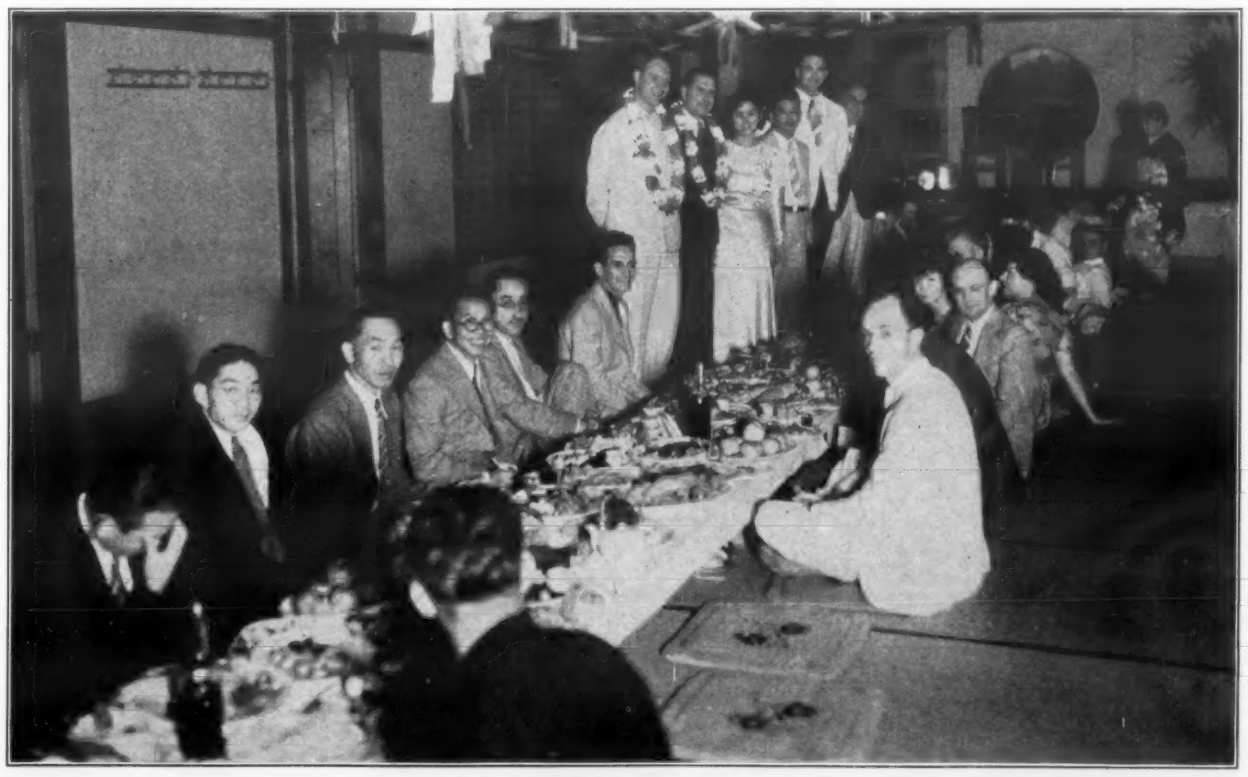
Leonard Names May Co. as Distributor

BALTIMORE, Md.—The May Co., department store here, has been appointed exclusive direct factory distributor in Baltimore for Leonard household electric refrigerators.

The store celebrated its appointment with a special sale which was advertised in the newspapers, in window displays, and by special placards in all departments.

Terms which the May Co. offered under its own financing plan were no down payments with three years to pay. Also publicized by the store was the 90-day cash payment plan whereby the carrying charge applied when the contract is signed is refunded if the purchaser pays cash within 90 days.

Detroiters Entertained in Royal Hawaiian Manner



When Editor George F. Taubeneck stopped off in Hawaii on his world tour he wrote back, among other things: "If you don't think it's tough to sit down and grind out copy here—try it sometime. What a place!"

The above photograph was sent by H. K. Ichida, president and manager of the Electric Supply Co., Ltd., of Honolulu, Territorial distributor for Grunow, and was taken at a real Japanese-Hawaiian Teahouse Party which Mr. Ichida gave in the editor's honor. Anent George's reactions to the party Mr. Ichida says:

"Mr. Taubeneck and his two Detroit friends commented on the keen entertainment. They marveled at the agile and graceful motions of the Hula dance and the beautiful strains of the steel guitar."

Mr. Ichida says further that the guests commented on the editor's "personality and his elegant speech."

Standing in the picture (left to right) are Editor Taubeneck; Tommy Emmets, representative of the Detroit Lions football team which was in Hawaii at the time of his visit; Miss Shiraki, secretary to the distributor; Mr. H. K. Ichida; George Christensen, tackle on the Detroit Lions team (the exploits of this team have often been mentioned in the NEWS); Paul Linder of Geo. H. Eberhard Co. of San Francisco.

Between Acts at Frigidaire Show

(Upper Left) Carl A. Copp (left), vice president and general sales manager of Frigidaire Corp., and Thomas A. Farrell, assistant household sales manager, talk things over between the acts at the recent eastern district convention in New York City. (Lower Left) "You should have a big year," Dr. J. D. Downey, General Motors staff executive, and Adam Stricker of the office of Alfred P. Sloan, Jr., G-M president, tell John S. Pfeil (at right), manager of Frigidaire's New England operations. (Upper Right) "And that's how big that replacement volume runs," M. Annapoleon, who heads Frigidaire's New York commercial sales operations, tells Harry J. Wines, general sales manager, New York. (Lower Right) E. B. Newill (center), chief engineer and director of research for Frigidaire, spins a yarn for E. N. Madden (left), vice president, Frigidaire, Ltd., and D. K. Banker, resident comptroller, Frigidaire.

Specifications of New Dayton Line

Model No.	Storage Capacity Cu. Ft.	Shelf Area Sq. Ft.	No. of Ice Trays	No. of Cubes	Lbs. of Ice	Exterior Dimensions Height	Width	Depth
8-D-4	8.04	15.83	4	112	10	56	35¼	26½
7-D-4	7.04	15.08	4	112	10	56	31⅞	26½
6-D-3	6.03	12.83	3	84	7½	56	28½	26½
6-S-4	6.05	14.0	4	84	6¾	54	26½	25
5-S-2	5.02	9.5	2	56	5	56	23¾	25
4-S-2	4.0	8.2	2	56	5	49¼	23¼	23

New Construction Features Added to Dayton's Two Lines of 1936 Refrigeratars

(*Concluded from Page 1, Column 3*)

erico, are done in a "restrained modern treatment," with rounded corners, and ebony black base.

Another of the features of the 6 and 7 cu. ft. models is the Dayton Drawer, a porcelain enameled refrigerated drawer located at the bottom of the refrigerated compartment.

Built the full width of the cabinet, the drawer is said to have sufficient depth for storing prepared foods such as cold cuts, grapefruit, salads, and dessert on plates ready to serve in chilled, fresh, hydrated condition.

Quiet condensing units, and waterproof insulation of ample thickness to contribute to operating economy, are also claimed by the makers.

Egg and fruit baskets mounted on the inside door of the deluxe cabinet door, "No-Tip" shelves spaced for various sizes of foods and bottles, and one rubber ice cube tray with additional metal trays for reserve capacity are also being emphasized by Dayton sales promotion.

Cold control, defroster, and dome lights are standard equipment on all models.

Dealer Claims Franchises Violate Anti-Trust Laws In Defending Suit by Distributor Arising from Macy Deal

(*Concluded from Page 1, Column 1*)

act, the Clayton act, and the Federal Trade Commission act.

As nearly as it can be pieced together after almost a year's lapse, the story of the transaction is this:

On Jan. 29, 1935, Rackliffe Bros. received an order for a carload of 86 Kelvinator refrigerators of 4 and 6-cu. ft. sizes for use in apartment houses in Hartford. The order came through Nicholas B. Francis, a proprietor of Mayflower Sales Co., Hartford Crosley dealer at the present time.

This, it will be remembered, was during the period in which Frigidaires, Kelvinators, and other nationally known makes of refrigerators were mysteriously appearing on the floor of Macy's New York department store, to be offered to buyers at 6 per cent under established retail prices.

F. O. Rackliffe, vice president of the distributorship in charge of sales, knowing that refrigerators were being bootlegged into the Macy store under various guises, questioned Mr. Francis about the order before approving it. He was told, he asserts, that the units were being purchased for installation in three apartment houses in the city, in which the owners had insisted on Kelvinators in preference to other makes. One H. L. Seltzer was represented to be the agent for the buildings.

Inspection of the apartment houses revealed that one was without electric refrigeration, while the other two had old systems apparently in need of replacement, so Mr. Rackliffe let the order go through.

Second Carload Ordered

On March 4, Mr. Francis ordered a second carload of 80 refrigerators, this time for installation in apartment houses in New Haven, Conn., of which the same Mr. Seltzer was said to be agent. Since the first order had apparently been bonafide, and since there was no evidence of the refrigerators being used for any purpose other than the one for which they were expressly purchased, the second order was also received and shipped to New Haven.

Both shipments were paid for—$7,192.62 for the first, and $6,465 for the second, less one-half the freight charges.

The 86 refrigerators bought on Jan. 29 were sold by Mayflower to H. L. Seltzer on Feb. 15; the 80 bought on March 4 were delivered on March 11. In neither case, however, did the company actually make delivery of the refrigerators to Mr. Seltzer, but did deliver to him the railroad way bills covering the two cars.

The company asserts that, in the first case, the purchaser, Mr. Seltzer, said he would install the refrigerators in apartment houses in Hartford, and, in the second case, in apartment houses in New Haven. Both orders were oral. In both cases, also, it is asserted, the purchaser represented himself as a direct buyer, and not as the agent for another principal.

Asked if it had made any investigation to check the identity of the purchaser or agent, the proposed places of installation and the connection of the purchaser with it, the actual use of the refrigerators and the connection of the purchaser with R. H. Macy & Co., and, if so, when the investigation was made and what it disclosed, Mayflower Sales Co., through its attorneys, did not comment.

Whether the refrigerators were turned over by Mr. Seltzer direct to Macy's, or whether he acted through one or more intermediaries, has not been determined. At any rate, the refrigerators soon made their appearance on Macy's sales floor.

Units Bought Off Macy's Floor

Kelvinator Corp. bought up 163 of the units from the department store at prices from $16.03 to $22.61 per unit higher than the established distributor's net cost and resold them to its New York City distributor, E. A. Wildermuth. These losses were in turn charged to Rackliffe Bros., the total, with transportation and other expenses, amounting to $3,276.11.

Under its distributor's agreement with Kelvinator, Rackliffe Bros. was responsible for the sale of the refrigerators, and was obligated to repay to Kelvinator the $3,276.11, plus interest, or face the possible loss of its franchise. After this payment had been arranged, Rackliffe Bros. filed the suit against Mayflower, seeking to recover the amount, and charging fraud and breach of contract.

In its complaint, Rackliffe Bros. charges that as a result of the fraud of the defendant (Mayflower Sales Co.) in inducing itself, the plaintiff, to sell such refrigerators to it, and the breach by the defendant of its agreement that said refrigerators would be used in Connecticut and not resold or installed outside the plaintiff's franchise territory, the plaintiff has become liable for, and will be compelled to pay, $3,276.11, plus interest, and that it will lose its franchise unless it pays.

Terms of the Franchise

The complaint further sets forth that Rackliffe Bros., as distributor in Connecticut and parts of Massachusetts for Kelvinator, agreed under its franchise not to sell or install refrigerators outside its own territory, and that it would compensate any distributor in whose territory such refrigerators were installed or resold by repaying one-third of the difference between that distributor's net cost, f.o.b. Detroit, and Kelvinator Corp.'s recommended installed price.

Kelvinator Corp., the complaint states, also reserved the right to cancel its franchise with Rackliffe Bros. and refuse to sell it any more refrigerators, if the agreement was broken by the plaintiff. The defendant knew the terms of this franchise agreement, it is asserted.

In its demurrer, Mayflower Sales Co. argued through counsel that it is not liable for the damage claimed, because it has paid plaintiff the full agreed price for the refrigerators, and because the plaintiff has not suffered loss from any of the acts, representations, or alleged breach complained of.

The Rackliffe contract with Kelvinator Corp., the defendant asserts, is contrary to public policy, because its enforcement would hinder competition and create a monopoly. Enforcement of the contract, it is further claimed, would restrain the natural flow of commerce and freedom of competition in interstate trade.

The Dealer's Defense

The plaintiff's contract, the demurrer states, is void, because its enforcement would result in suppression of the freedom of competition by unlawful methods; because it purports to fix prices of commodities shipped in interstate commerce at rates prescribed by Kelvinator Corp.; and because it purports to inure to the advantage of a third party not in privity to either party, and on account of whom, or in whose behalf, no liability has been asserted against the plaintiff under said contract.

The contract, it is asserted, is void as part of a scheme or combination with others, as a result of which control of manufactured products is sought after the same have entered the channels of commerce, and under restraints upon the alienation of such commodities, in violation of the Sherman Anti-Trust act, the Clayton act, the Federal Trade Commission act, and, in so far as the plaintiff predicates thereon a claimed liability against the defendant, in violation of the defendant's rights under the Constitution.

No liability being stated by the plaintiff to Kelvinator Corp., none is alleged or appears as against the defendant, the demurrer concludes.

The case is being argued before Judge Newell Jennings of Hartford County Superior Court. Edward A. Mag of New Britain is attorney for Rackliffe Bros., and Buckley, Creedon & Danaher of Hartford is defending Mayflower Sales Co. in the suit.

Superfex Restyles Refrigerator to Match Range

CLEVELAND—New models of the Superfex line of oil-burning refrigerators manufactured by the Perfection Stove Co. have been re-styled to harmonize in color and design with the Perfection cabinet-type oil range which was recently introduced.

The Superfex refrigerator operates on the intermittent absorption principle. Both water and air cooling for the condensation required in the refrigeration cycle are provided in the refrigerator. Coils in the condenser tank are surrounded by water, but do not require running water—a cooling method which is also used in automobile engines.

Eight firms were recently appointed to the Superfex distributing organization, reports Walter M. Barber, sales manager of Perfection Stove Co.'s refrigeration division.

New distributors are: Straus Bodenheimer Co., Houston, Tex.; A. A. Schneiderhahn Co., Des Moines; R. S. Proudfit Co., Lincoln, Neb.; Midwest Grunow, Inc., Kansas City; Brown Supply Co., St. Louis; Spurrier's Inc., Oklahoma City; E. C. McKelvey Radio Co., Salina, Kansas; and Mullins Furniture Co., Dodge City, Kansas.

Crosley Markets Line Of Four Washers & Electric Ironer

CINCINNATI — Under the trade name of "Savamaid," the Crosley Radio Corp. has entered the electric washer field with four washing machine models and an electric ironer.

In the new line, which will be marketed through regular Crosley dealers and distributors, are three wringer-type washers and a centrifugal-type dryer, called "Spe-Dry."

Listed at $99.95, the Spe-Dry does the washing and drying automatically, all within the machine itself; it fills itself, empties itself, does the bluing and rinsing without extra handling, according to Neil Bauer, manager of the special products division.

Two units constitute this new model: the conventional-type washing unit, and the drying or Spe-Dry basket. It is in the drying unit that all the rinsing takes place, with clean water being automatically forced through the clothes.

Mr. Bauer claims that the 300 wringing operations which are part of an ordinary family wash of 100 pieces are all accomplished in a single operation, which cleans, rinses, and dries.

Flexible hoses provide for the flow of water to and from the two compartments so that the washing may be done without mess in the kitchen as well as in the basement.

Wringer models come in three price classifications: Model 61, listed at $49.95; Model 62, listed at $69.95; and Model 63, listed at $79.95. Each model may be had with a pump at $10 additional.

Agitator fins of new Crosley models are designed to give maximum action to clothes in the mid-zone, since this is the region where the clothes usually float, Mr. Bauer says.

The new "Velvetouch" wringer with which Models 62 and 63 are equipped, has an upper roll of soft rubber that molds itself easily but firmly over whatever passes between it and the hard roll below. The manufacturer says that it has been designed so that a heavy steel chain can be run through it without injury to the rolls, and at the same time a glass eye dropper can be run through without breaking the dropper.

The new electric ironer, listed at $49.95, and also known as the "Savamaid," is equipped with a foot control so that the operator may work in a faster manner while sitting down.

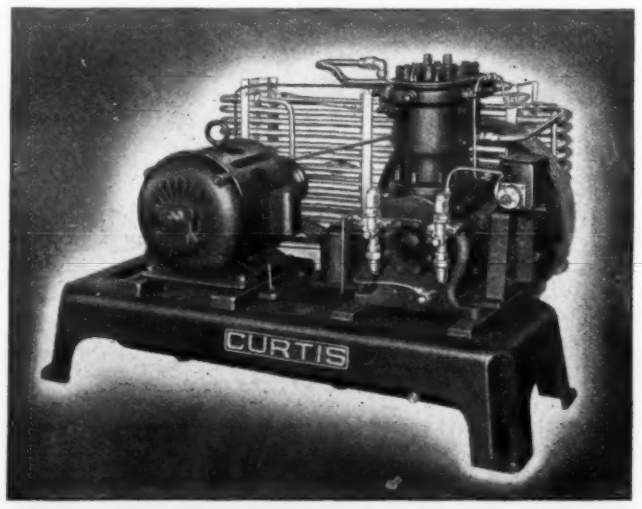
Krich-Radisco Organizes Dept. to Help Dealers

NEWARK — A new merchandising department to assist dealers in the merchandising of Kelvinator products has been formed by Krich-Radisco, Inc., distributor here.

Dave Wagman will be manager of the department.

CURTIS REFRIGERATION
Units to fit every need

Curtis, one of the oldest compressor manufacturers, offers an unusually complete line of refrigerating units—1/6 to 2 H.P. air cooled; 1/3 to 15 tons water cooled—reflecting 82 years of successful engineering, designing and manufacturing experience. Some desirable territories are still open for reliable distributors.



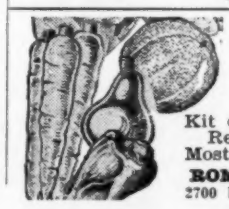
ESTABLISHED 1854

Write for details.

CURTIS

CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Company
1912 Kienlen Avenue, Saint Louis, U. S. A.
In Canada
CANADIAN CURTIS REFRIGERATION CO., LTD.
20 George Street, Hamilton, Ontario, Canada

MILLER CONDITIONAIR
Dealers Everywhere
See Ad Page 4



FOOD DISPLAY
For Refrigerators
Kit of 45 Items
Special $5.95
Kit of 25 Items.....$3.25
Realistic—Permanent.
Most complete line made.
ROMAN ART CO., INC.
2700 Locust St., St. Louis, Mo.

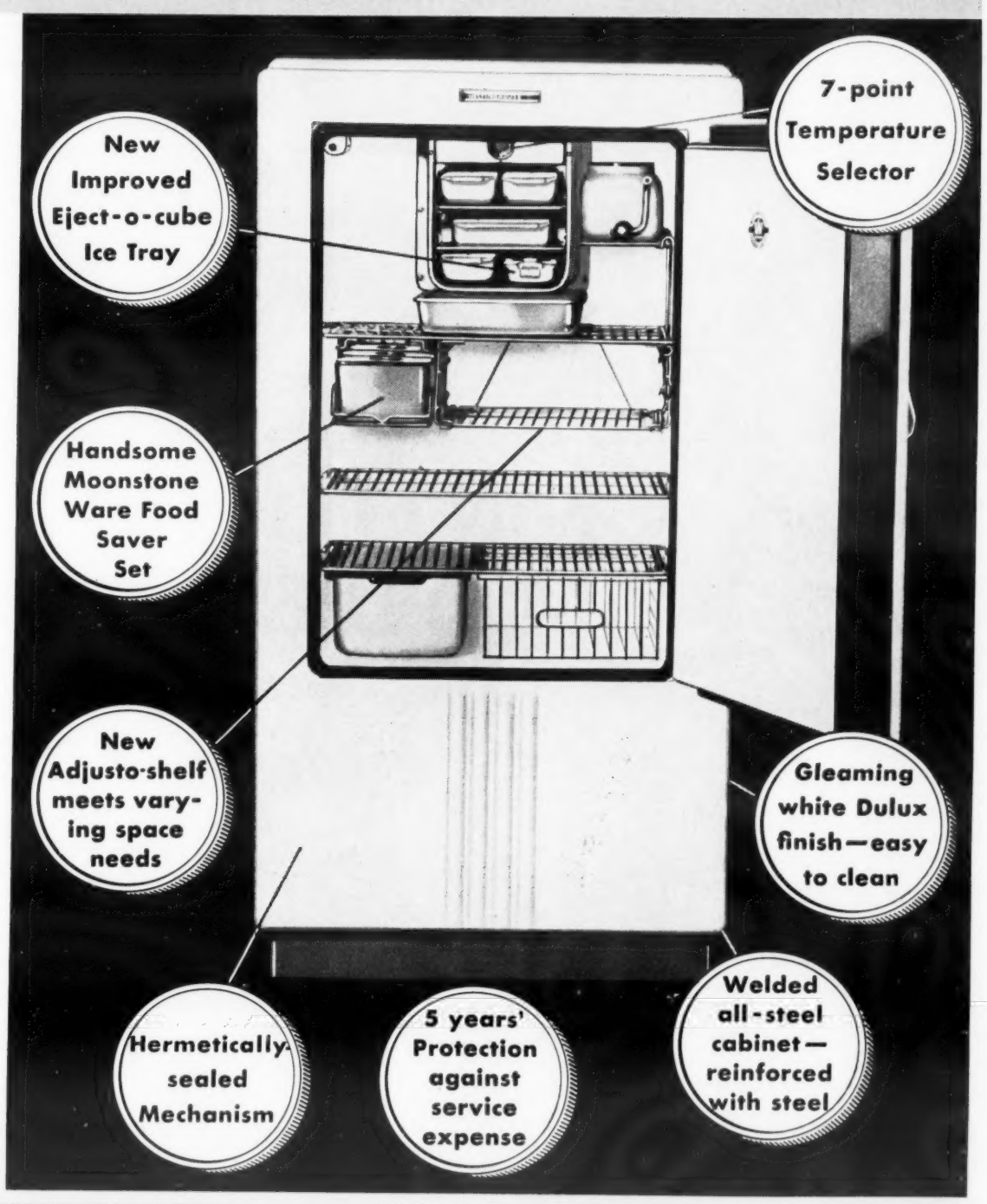
THE ALL-AMERICA MARKET

Swings to Westinghouse

NEW STANDARD OF REFRIGERATOR VALUE

● "Class" features for the All-America mass market! Westinghouse Refrigerator Dealers find their selling horizons pushed back to include 8,000,000 new refrigerator prospects—a new market of value-seekers—a market of expanding buying power—an unparalleled sales opportunity featuring *protected profits* for Westinghouse Dealers.

For full details of the Westinghouse Golden Jubilee line and sales program, write to Westinghouse Electric & Manufacturing Company, Mansfield, Ohio.


New Improved Eject-o-cube Ice Tray
7-point Temperature Selector
Handsome Moonstone Ware Food Saver Set
New Adjusto-shelf meets varying space needs
Gleaming white Dulux finish—easy to clean
Hermetically-sealed Mechanism
5 years' Protection against service expense
Welded all-steel cabinet—reinforced with steel

Westinghouse *Golden Jubilee* REFRIGERATORS

WESTINGHOUSE 1886 1936 GOLDEN JUBILEE

Around the World

With George F. Taubeneck

Los Angeles Appliance Dealers Prepare for Boulder Dam Power

Coming of Age

In Los Angeles today the most important fact in the lives of electrical appliance merchandisers is the advent of Boulder Dam Power.

This coming event colors all executive thinking, influences all cooperative planning, fires with ambition every salesman who has caught the vision of what this great dumping of excess kilowatts into southern California means to his livelihood.

"California's electrical age has just begun" is the slogan with which they are all confronted every time they turn around. They believe it; and so will you, after you have studied the situation which makes California unique as an electrical appliance market today.

* * *

Boulder Dam Power

Electrical energy cannot be stored in a warehouse. It must be used as it is generated. Consequently, when the great Boulder Dam Power plant gets going, southern California must be prepared to consume almost *twice* its present use of electrical energy.

At the time of this writing, the water behind this great dam is rapidly rising to the height necessary for the generation of power. The proper equipment is being installed for distribution of this power in southern California.

The importance of this project to the electric appliance salesman is better understood when it is recalled that southern California power companies are under contract with the Federal Government to take up the following quantities of electrical energy:

For the first year of distribution ..... 429,000,000 kwh
For the second year 1,303,000,000 kwh
For the third year 2,023,000,000 kwh
For the fourth year 3,742,000,000 kwh
For the fifth year 3,564,000,000 kwh
For the sixth year 3,953,000,000 kwh
For the 7th year 4,115,000,000 kwh

(This includes the power necessary for pumping by the Metropolitan Water District of Southern California and the allotments of Nevada and Arizona, which the Bureau of Power and Light and the Southern California Edison Company have agreed to take if the above states do not qualify.)

This electricity is an addition to the present supply, which adequately provides for the present annual consumption of approximately 4,400,000,000 kwh yearly. Rates for electricity have been low in southern California for several years, yet new reductions in rates have been announced.

The following are the monthly rates recently established by the Bureau of Power & Light:

4.4¢ per kwhr. for the first 35 kwhrs.
2.3¢ per kwhr. for the next 75 kwhrs.
1.5¢ per kwhr. for the next 100 kwhrs.
1.25¢ per kwhr. for all additional kwhrs.
0.75¢ per kwhr. for electric water heating separately metered.
Minimum charge 55¢ per consumer.

The above contains all of the information necessary to figure the monthly bills for homes having five or less lighting circuits, representing 97 per cent of all Los Angeles homes.

No minimum charge for electric cooking or water heaters.

No minimum charge for electric air heaters unless you have more than 10 kilowatts.

Southern California has had its real estate, tourist, agricultural, and manufacturing eras. All signs now point toward an era in which the distribution and consumption of electricity will have the emphasis. The state is rapidly becoming electricity conscious.

In anticipation of the coming of Boulder Dam power, utilities and distributors are combining in one of the most intensive and extensive advertising programs on record to promote the sale of electrical appliances.

For the appliance salesman, southern California should be a Valhalla in the next few years.

* * *

Utility Merchandising

Los Angeles is served by a municipal power company, the Bureau of Power and Light. At present, this city-operated utility has four supervisors and four salesmen—also a varying number of men stationed in department store appliance sections—all working on salary to help dealers and their salesmen find prospects and close sales.

Not so aggressive or effective as commission salesmen, this crew is, even so, a genuine help to Los Angeles dealers.

On Second and Broadway the power company maintains an elaborate showroom in which all makes of refrigerators are displayed *in operation*. Dealers from all over the city take prospects in here.

Not only does the utility provide free wiring for electric range installations, but for a fee of $5 will furnish free service on the range *permanently*.

Gas Competition

Naturally the gas company isn't taking all this electrical activity lying down.

Plumbers all over southern California have been made display dealers for gas ranges and Electrolux refrigerators, and the gas utility maintains a big staff of salaried salesmen.

As a result, Electrolux has done a whale of a job in this region, and provides plenty tough competition for all the electric refrigeration organizations.

Not only are Electrolux prices comparatively low, but payments are put right on the gas bill. It's possible to buy and operate a gas range and an Electrolux refrigerator there for as little as $4.50 a month.

Chiselling—a practice dearly loved by southern Californians—is not discouraged by the gas company, according to competing electrical organizations.

* * *

Thanks A Million

Among the many people who were especially nice to us in Los Angeles was the helpful LOUIS BIENVENU, district manager of the George Belsey Co., Ltd., General Electric distributor of home appliances.

Others in the Belsey organization we enjoyed meeting were W. A. MARSDEN, retail sales manager; R. (BOB) A. MANGAN, advertising manager; TED CHAMBERLAIN, commercial manager; CLEON BROWN (BROWNIE), metropolitan manager; GEORGE SILGER, wholesale manager; and Dr. VERNE STEWARD, who is conducting aptitude test experiments on novice salesmen.

* * *

Comparative Costs of Operation of Appliances

Following is a summary of cost of operation of each major appliance worked out by the Los Angeles Bureau of Power & Light (municipal) for various areas.

	Approximate Monthly Cost of Operation of Major Appliances								
		Low Rate Areas					Other Rate Areas		
	Estimated Monthly Kwhrs.	L.A.	T.V.A.	Seattle	Adjacent to L.A. Pasadena	Edison Co.	San Francisco	N. Y.	Chicago
Refrigerator	40	$0.92	$0.90	$0.80	$1.00	$2.00	$1.60	$ 2.00	$1.14
Range	125	2.11	2.45	2.50	2.00*	2.10	2.53	6.25	3.56
Water Heater	345	2.59	2.65	4.00	2.59	3.65	3.97	17.25	9.84

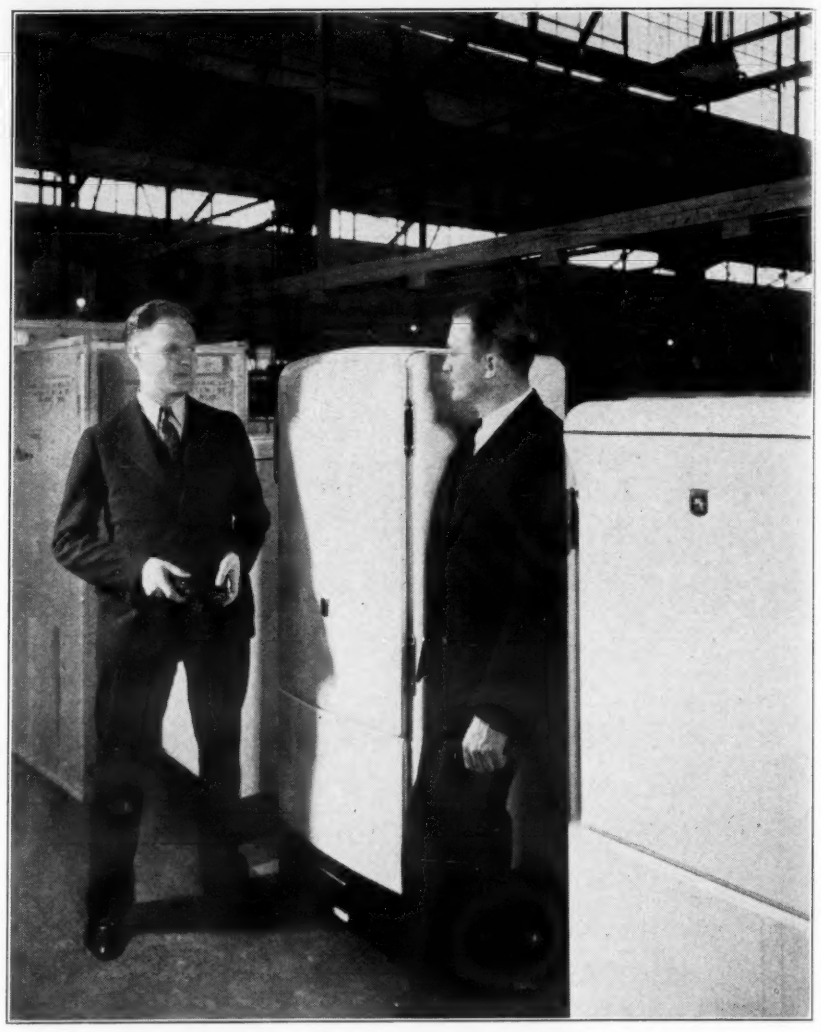
The Southern California Edison Co., which serves southern California, duplicates these services; and in addition, is offering a free set of Pyrex dishes to each person who purchases a range before April 15.

JACK MORSE of the Dan B. Minor Co., advertising agency, is developing the advertising and program, which includes newspapers, radio, billboards, and direct mail.

He's promised to prepare a story on the campaign and send it to the NEWS office. (*Note*: the editorial department hopes to get the story in time for the next issue, which will tell more about industry activities in Los Angeles.)

W. L. "JACK" FROST, vice president and commercial manager of the Southern California Edison Co., and F. L. HOCKENSMITH, general manager of the Electrical Development League of Southern California (organized recently to promote the sale of appliances against the coming of Boulder Dam excess power), are also especially active in this campaign.

Editor Sees 1936 Gilfillan Products



George Taubeneck (left) editor of Electric Refrigeration News, inspects one of the 1936 Gilfillan deluxe models, after going through the plant with "Pete" Heiser, Gilfillan's sales manager.

O'Keefe & Merritt, Gilfillan Supply Much Of Pacific Coast Refrigerator Market

Gilfillan Bros.

At one time Los Angeles harbored some 14 different electric refrigerator manufacturers, all working under the "tent" provided by high freight costs over the Rockies.

At present, of this group only Gilfillan Bros. and O'Keefe and Merritt operate at all extensively.

S. W. GILFILLAN, president, and J. G. GILFILLAN, vice president and export manager, operate the firm bearing their name. Nearly 18% of their production—they also make radios—is exported around the rim of the Pacific Ocean.

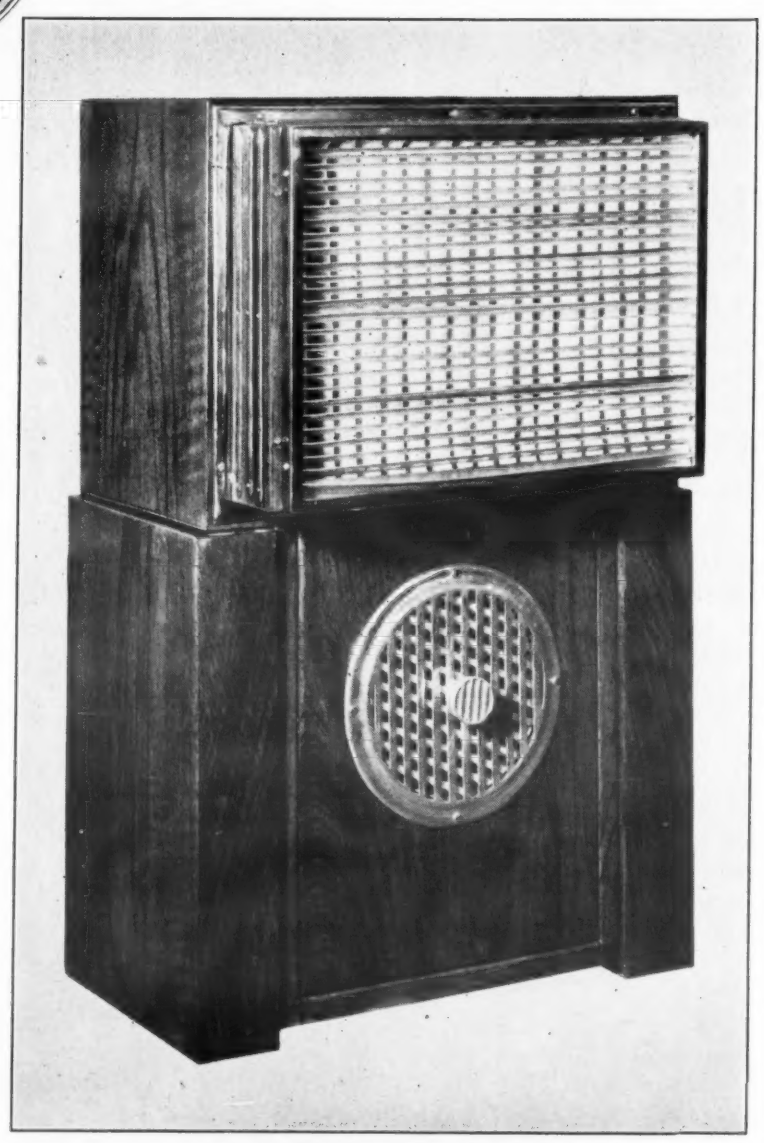
Last year they sold approximately 5,000 electric refrigerators. In 1936 their production schedule is set at 10,000 units.

Into Seeger cabinets they put oversize, two-cylinder Scotch-yoke compressors of their own manufacture. They service all Gilfillan refrigerators installed within a 30-mile radius of the factory, with a staff of only *two* men.

PETER HEISER, the active and

(*Concluded on Page 6, Column 4*)

ANNOUNCING MODEL "D"



MILLER CONDITIONAIR

Air Capacity: 550 cu. ft. per minute
Heats with Hot Water
Heats with Steam
Cools with Cold Water
Cools with Direct Expansion

Dimensions:
Height: 35 inches
Width: 22 inches
Depth: Top, 16 inches; Bottom, 12-1/2 inches
Weight: 175 lbs.

MILLER CONDITIONAIR, INCORPORATED

Executive Offices:
1138 So. Broadway, Los Angeles, Calif.

Factory:
1134 So. Main St., Los Angeles, Calif.

DEALERS EVERYWHERE

With Pump $59.95

THE CROSLEY SAVAMAID
(Model 61)

A high-grade washing machine, standard in design and features. Heavy pressed-steel chassis, tub vitreous-porcelain-enameled inside and out. Mounted on rubber. Latest type Lovell wringer. Oilless bearings, enclosed transmission. Smart two-tone appearance.

THE CROSLEY SAVAMAID SPE-DRY
(Model 64)

Improved spinner-type washer. You can wash, blue, rinse, dry right in the washer itself. Possible, even, to do a complete washing without wetting the hands. More than a washing machine . . . a complete new *method* and routine for washing that enables the housewife to cut the thirteen tiresome things she now does when washing clothes to five simple things. Highest quality, handsome appearance. A crowd collector when demonstrating.

CROSLEY

FIRST in Radio Value
FIRST in Refrigerator Value

Now FIRST in Home Laundry Equipment Value!

More than a million and a half washing machines will be sold during 1936. Home laundry equipment is a tremendous business, one that has suffered less from unfavorable conditions than any other home utility. Crosley now enters this field with a sensational line of washing machines and ironers, containing features that lift them clear out of competition . . . priced to meet all comers; styled for today. Models to meet every purse and viewpoint.

This decision gives to Crosley dealers a new contact with their market, a new opportunity for year-round profit, a new point of interest to bring people to the store, a new possibility for increased sales of Crosley radios and Shelvadors, as well as home laundry equipment, a new kind of crowd-collecting store demonstration.

Match washing machines or ironer against anything, and you will realize that, from now on, your customers need not pay high prices for the best laundry equipment that can be made.

Savamaid Models 61, 62, 63 equipped with gas engine assembly at additional cost.

WITH PUMP $79.95

Standard (Model 62)
De Luxe (Model 63)

WITH PUMP $89.95

THE CROSLEY SAVAMAID
(Models 62 and 63)

Featuring the sensational Crosley VELVETOUCH wringer that insures full wringing action even when clothes are bunched. No careful feeding necessary. So resilient you can run a long chain through it; so safe it won't break a glass eye-dropper; so positive in action that it leaves no saturated spots. The most interesting demonstration imaginable. Washer has special Mid-zone agitation. Highest quality throughout.

The Crosley Radio Corporation

POWEL CROSLEY, Jr., *President* **CINCINNATI**

(Prices slightly higher in South and West)

George Taubeneck's Camera Records Activities at Los Angeles Manufacturing Plant

(1) F. A. Riley, sales manager for O'Keefe & Merritt, and Editor George Taubeneck inspect one of O'Keefe & Merritt's household refrigerator models. (2) Mr. Riley points out some of the design features of an ice-cream making unit. (3) Range assembly section of the O'Keefe & Merritt plant. (4) The enameling department.

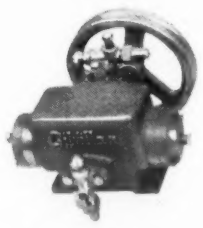
Gilfillan Executives Greet Touring Editor

When the editor came up to the entrance of the Gilfillan factory he was greeted by Sales Manager "Pete" Heiser of the Gilfillan firm (at left) and Dean Fowler, a representative for General Electric motors, who happened to be at the Gilfillan plant. At the right is Mr. Heiser and J. G. Gilfillan, vice president and export manager.

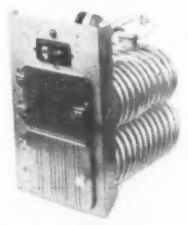
Gilfillan

With confidence established by five years of successful performance in the West's hottest climate, Gilfillan announces its new super powered 1936 line especially designed for the West.

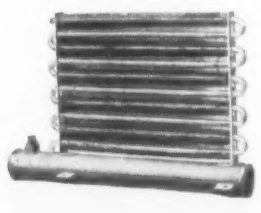
Check the following important construction features which in Gilfillan refrigerators guarantee efficient operation in the most extreme Western temperatures.



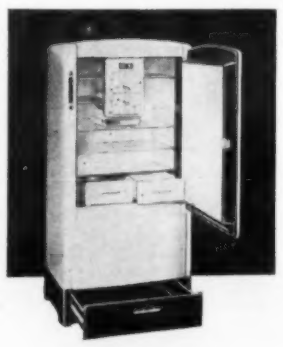
The Gilfillan designed and built, heavy duty compressor of 50% greater than average capacity contains but three simple moving parts. No compressor could be less mechanical and more efficient.



The Gilfillan especially designed evaporator with 50% more direct heat absorbing surface. No evaporator could be more efficient for fast ice freezing and good box temperature.



The oversize radiator type condenser with 50% greater area for dissipating more heat faster. No condenser is more efficient.



The Gilfillan Seeger-built cabinet, heavily insulated with high rating insulation. No cabinet combines more beauty with high efficiency.

Write immediately to Gilfillan for direct-from-the-factory to-dealer franchise. Gilfillan's are priced to sell with a long profit to the dealer. NO jobbers—factory to dealer only.

GILFILLAN BROS. INC.

1815 Venice Blvd.

LOS ANGELES, CALIFORNIA

Around the World

With George F. Taubeneck

West Coast Manufacturers Design Units To Meet Special Conditions

(*Concluded from Page 4, Column 5*)

alert sales and advertising manager, was introduced to us by L. D. Fowler, who sells fractional horsepower motors for the General Electric Co.

* * *

Building Boom

O. A. BRANDEL, refrigeration engineer, previously has had experience with Servel and Norge.

It is the aim of the Gilfillan Bros. to acquire refrigeration distribution in 11 western states; but right now they sell only in the metropolitan areas of Los Angeles, San Francisco, Portland, and Seattle.

One situation which is operating much to Gilfillan's favor is the building boom now in progress in Los Angeles.

Initiated by new, young (25 to 30 years old) contractors, this boom is effecting the erection of hundreds of new homes, which are sold before they are finished.

Mr. Heiser claims Gilfillan is selling the majority of the refrigerators going into these new houses.

* * *

1936 Products

Four models are included in the 1936 Gilfillan household electric refrigerator line. There are two standard models, one intermediate model, and one deluxe model. Mr. Heiser says that plans are being made to add another deluxe model at a later date.

Gilfillan uses Seeger cabinets exclusively, and the veteran cabinet manufacturing firm has turned out a series of cabinets with three different styles of handsome, graceful cabinets in the modern mode.

In order to meet the excessive demand for refrigerating capacity found in the hot, dry desert areas which comprise about 30 per cent of the market which Gilfillan covers, special consideration has been given to the manufacture of a compressor of ample capacity.

Thus the Gilfillan compressor, evaporator, and condenser are all "oversize" in terms of normal requirements, but they have been designed for operation in room temperatures as high as 120° F.

Mr. Heiser points out that this matter of having to deal with higher-than-normal temperatures puts them in a good spot to capture export business in sub-tropical and tropical countries. Says he:

"A Southern California manufacturer has two very definite advantages in the export market to countries bordering the Pacific Ocean.

"One is geographical location, giving advantage of freight rates and time.

"The second point of advantage is a knowledge of export heat problems, and the fact of being tooled up to make refrigerators capable of operating efficiently in extreme climates."

The deluxe model has an attractively rounded-out cabinet design, with vertical lines running down the center of the cabinet over the nameplate. Door opener is a cylindrical "touch-bar." Cabinet has a centered evaporation, with two chromium doors, one over the other.

The host of features in this model is headed by two metal-front special storage drawers in the bottom of the cabinet interior, and a special pull-out dry vegetable bin in the flush base, which is finished in black. A porcelain shelf over the utility drawers is another convenience.

Claim is made by Gilfillan officials that their 1936 intermediate model is the "most compact" refrigerator on the market because of its design. Cabinet styling is effected by a pilaster-type design on the front.

This model also has the utility drawers (in somewhat different style) and storage bin.

The two standard models have graceful, embossed cabinets, with exterior finished in Dulux. They have a centered evaporator, touch-bar door opener, and automatic interior electric light.

Water bottle, Kontanerette, and vegetable dish are available with both the intermediate and standard models at a slightly increased price.

The Scotch-yoke, or horizontal reciprocating Gilfillan compressor is driven by a ⅛-hp. General Electric capacitor motor, and operates (on all but the smallest model) at a speed of 575 r.p.m. to produce a refrigeration capacity of 175 lbs. ice melting effect per 24 hours.

Compressor bore is 1½ inches; stroke 1⅛ inches. Sulphur dioxide is the refrigerant used. Refrigerant flow is controlled by a Mayson expansion valve.

The 10-point Cutler-Hammer temperature control operates automatically. Defrosting is by a push button.

* * *

O'Keefe & Merritt

Manufacturing electric refrigerators, electric and gas ranges, commercial refrigeration compressors, water coolers and heaters, beer and beverage coolers, ice cream cabinets, and ice cream machinery, the O'Keefe & Merritt factory is a big and busy place.

This concern makes its own refrigerator cabinets as well as compressors. It also does its own servicing, delivery, and installation. Dealers do not do any of these—they simply call up the warehouse—or the factory service department—and the deed is done.

O'Keefe & Merritt refrigerators have distribution only in southern California; but in this home territory they have wide acceptance, and capture from 15 to 30 per cent of the market annually.

This concern also claims that it gets 60 per cent of all the gas range business on the entire Pacific Coast.

D. P. O'KEEFE is president and general manager, and R. J. MERRITT is secretary-treasurer. R. B. ATCHISON is advertising manager.

Sales manager of the refrigeration department is F. A. RILEY, ELMER JOHNSON is refrigeration engineer, and JOSEPH SPALLINO his assistant in charge of production. We met and talked with all these gentlemen; and also LOUIS SMALLIN of the range production department.

Specifications on 1936 Gilfillan Line

Model No.	Storage Capacity Cu. Ft.	Shelf Area Sq. Ft.	No. of Ice Trays	No. of Cubes	Lbs. of Ice	Exterior Dimensions Height	Width	Depth
S-65	4	9.08	2	56	5	53½	23⅞	24½
S-67	6.5	13.5	3	84	7½	58¾	30	24½
I-66	5.33	13.6	2	84	7½	60	26½	23
D-67	6.8	14.33	3	112	10	65⅛	30	24
D-610	9	18.16	5	140	15	71	33	24

Sales Idea of the Week

By V. E. (Sam) Vining

I called on an architect in Detroit to sell him an oil burner for his own home.

I found a bewildered man. He had listened to so many sales talks, so many claims, and counterclaims, that he was about disgusted with the whole idea of burning oil.

In exasperation he said to me:

"How in the world can a man separate the chaff from the wheat? On what basis should a man make a decision as to which burner to buy?"

"I'll tell you how," said I. "Just put your name right here, and when the rest of them come around tell 'em it is all settled.

I shoved an order blank in front of him, put my fountain pen in his hand, and—

He signed it.

You know without my telling you what I did when I got out of his office. What—me canvass any more that day—with an eleven hundred dollar order in my pocket—a high grade, high pressure salesman like me—?

Not on your life. I had to go back to the office, find the gang and tell 'em "What he said" and then "What I said"—then "What he said" and how I, cleverly, did thus and so.

As I walked into the office my fame had evidently preceded me because the office girl said, "Did you sell a burner to John Architect?"

"Did I," says I. "Ask me—and how."

"He just called up and cancelled," says she.

And I never did get the order back—or any business from his office.

I had forgotten the big selling idea that cleverness will never take the place of real selling.

An item must be sold whether before, or after, you get the order.

Combustioneer to Be Stoker Division of Steel Products Co.

SPRINGFIELD, Ohio—As a result of a recently completed merger, Combustioneer, Inc., formerly a subsidiary of Steel Products Engineering Co. of this city, will now be known as the Combustioneer division of the engineering company, reports R. C. Goddard, former president of Combustioneer.

Production demand arising from an 88 per cent increase in automatic stoker sales is given as the reason for the expansion move. The smaller company has recently completed a full block addition to its plant for the assembly line made necessary by the increased output.

Affiliation of the two companies dates back to the organization of Combustioneer, Inc. in 1928 when Steel Products Co. began building gear cases for the stokers.

The new merger will have no effect on the personnel of the stoker company, Mr. Goddard says. As former president, he will become a director of the engineering company and vice president in charge of the stoker division.

W. S. Burke, as secretary and treasurer of the merged company, has been made sales manager of the new division.

In addition to the new factory housing the assembly line, new equipment includes large capacity metal presses, arc welders, centerless grinders, heat-treating furnaces, and a new laboratory to facilitate a new production capacity of more than 150 stokers a day.

400 Michigan Dealers See Kelvinator Line

DETROIT—Four hundred dealers from 13 counties in southeastern Michigan saw the 1936 Kelvinator products, and heard this year's sales and advertising program outlined, at an all-day meeting last Tuesday, Feb. 25, at the Detroit-Leland hotel here, sponsored by the Detroit sales branch of Kelvinator Corp.

R. W. Walsh, manager of the local branch, acted as master of ceremonies at the meeting. All presentations of new products and sales plans were made by officials of the local branch.

Following the all-day session, a banquet was held for the visiting dealers.

MILLER CONDITIONAIR
Now ready to supply comfort to the multitudes.
See Ad Page 4

1st Bancredit Will Stop Collections on Goods 'Misrepresented'

DETROIT—L. M. Lilly, president of First Bancredit Corp., a financial institution which is handling FHA loans on appliance sales in many parts of the country, has announced through local newspapers that where misrepresentations have been made by salesmen to purchasers of appliances at the time the appliance was bought, First Bancredit Corp. will not seek further payment and will take such steps as are advisable against dealers or salesmen involved.

Mr. Lilly pointed out, however, that purchasers who claim that misrepresentations have been made to them must file affidavits giving the facts immediately.

In cases where satisfaction is not obtained through dealers or salesmen, accounts involving misrepresentations will be filed with the local FHA administrator, under the insurance provisions of the law, with the idea of the administrator taking further action.

Bowe Made Asst. Manager Of G-E Home Program

NEW YORK CITY—Walter A. Bowe was recently appointed assistant to J. F. Quinlan, manager of the new American home building program of the General Electric Co., with offices at 570 Lexington Ave. here.

Mr. Bowe, before his appointment as advertising manager of the air-conditioning department in 1932, was with the publicity department of the company at Schenectady.

Harrisburg Furniture Firm To Sell Leonards

HARRISBURG, Pa.—Jacob Miller, Inc., 7 N. Market St. here was recently appointed a Leonard refrigerator dealer by the Klein Stove Co., distributor.

One of the largest furniture houses in central Pennsylvania, the Miller company has branches in seven cities.

William Tague will head the special department created for the sale of Leonard refrigerators. Three carloads have already been ordered.

Thomas to Direct Crosley Sales for Titus Co.

OKLAHOMA CITY—Herndon Thomas has been appointed sales manager of the refrigeration department of the W. E. Titus Radio Corp., Crosley distributor here. Mr. Thomas held a similar position with an eastern Crosley distributor for several years.

'30 Meal' Trial for 'Undecided' Prospects Is Plan of Schenectady Distributor

SCHENECTADY—A "Thirty Meal" or "Ten Day" plan has been suggested by A. Wayne Merriam, G-E distributor here, to dealers who want to deal with a prospect who is definitely in the market for a refrigerator but undecided as to make.

The plan is offered to the prospect who is deciding among various makes, with the idea that the use of the refrigerator will sell him.

The customer is asked to pick the model which he would buy if he were choosing that make, and arrangements are made for delivery on the day when an evening appointment can be arranged to explain the operation of the refrigerator to the husband and wife.

With such an appointment, Mr. Merriam says, the salesman finds the prospect in a receptive mood and can work in his sales talk with the explanation of the operation and uses of the refrigerators.

In the use of this plan, according to Mr. Merriam, 90 per cent of such "on-trials" are closed the day of delivery.

The system as proposed by the distributor offers the advantage of the on-trial plan without a large investment in refrigerators in the hands of prospects.

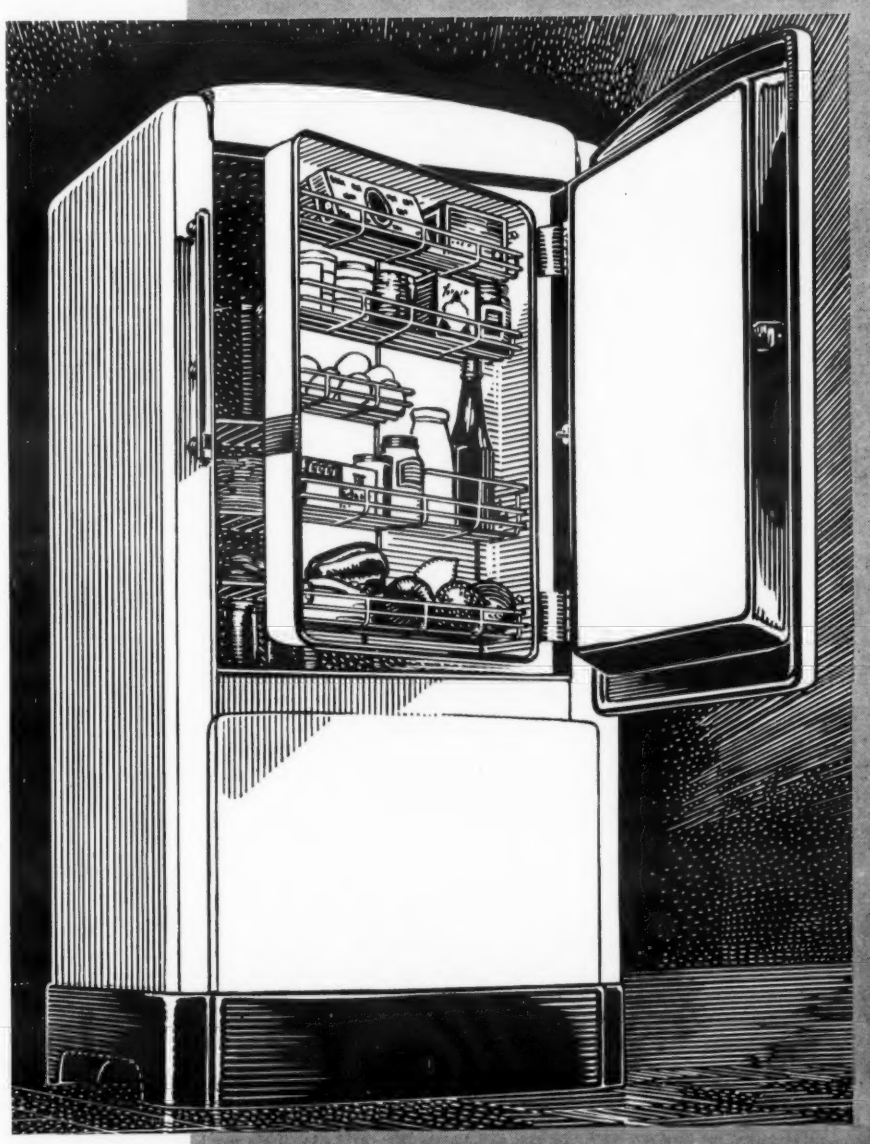
Marshall-Wells Host at 3-Day Dealer Meeting

SPOKANE, Wash.—Marshall-Wells Co., Crosley distributor, was host to a three-day dealer meeting of the Inland Empire Hardware Association held here Feb. 17-19.

Speakers were J. T. Elson of Marshall-Wells; Seth Marshall, president of the distributing company; and Paul W. Bialkowsky, Pacific Coast manager for Crosley Radio Corp.

Discussion centered around the recommendations of the Marshall-Wells associated stores planning board. Members of the board who were present included: O. L. Lundale, Deer Park; John Miller, Lind; Gene McGreevy, Tekoa; Henry Kaaen, Troy; and Earl Kidder, St. Maries, Idaho.

THE CONSERVADOR



. . . a demonstrable money-saving feature that Makes Sales

● The Fairbanks-Morse refrigerator is the *only* refrigerator on the market that gives you, the dealer, a *demonstrable* money-saving feature that *customers* can *see* and *feel* and *understand*. This feature is the *CONSERVADOR*. It is a shelf-lined inner door behind the main door for storing most frequently used foods. It serves to keep the COLD air from rushing out when the main door is opened. Motor doesn't run as often. A five-minute *demonstration* that *shows* lower refrigerating cost means more to a prospect than five months of *claiming* it! And it means more sales for the dealer. That's why F-M dealers are "going to town". It puts overwhelming sales advantage on your side—with CONSERVADOR you can *show economy and convenience* that others only claim. And that's not all. The F-M Refrigerator has *everything* offered by any other refrigerator—*plus* the CONSERVADOR.

Conservador Refrigerator machine units are warranted for 5 years.

What to do about it—If there is an opportunity for more sales and profits in selling refrigerators—you want to get in on it. *There is!* It's the F-M franchise. Maybe it's open in your territory. Don't miss the boat by waiting—write or wire now for details. Fairbanks, Morse & Co., *Home Appliance Division*, Indianapolis, Ind.

FAIRBANKS-MORSE Refrigerators

Other F-M Products: Washing Machines, Ironers, Radios, Automatic Coal Burners

Around the World

With George F. Taubeneck

George Taubeneck and his high speed Contax camera are now in Australia taking pictures which will appear in later issues of the NEWS. In this issue he tells about his visit to Los Angeles. Reports from San Francisco will appear next week.

Los Angeles

Everything you've ever heard about Los Angeles is true—no matter how utterly contradictory the various statements may have been.

It *is* a grand place to live.

Its climate is too good to be true.

Its people have all come from somewhere else, chiefly from the monotonous prairies and goshawful climate of the Middle West.

It is a hick town.

It is blatant and showy and does things in poor taste, like most newly rich.

It sprawls all over hellangone, without rhyme, reason, or resistance.

It has color and atmosphere, energy and dynamism, dash and fervor.

It is populated with fanatics. It is the town which could produce an Aimee Semple MacPherson, and yet could make its own harbor and agitate for the construction of Boulder Dam.

It's cheap to live there. You won't believe how low food prices are until you see them.

Almost at once this writer felt at home there—a feeling which was heightened with each passing day.

To begin with, Los Angeles is about the size of Detroit (our present home), and like Detroit, Los Angeles has grown quickly and amazingly without losing its provincial nature.

In the second place, its people are like those among whom we grew up—the sodbusters of the Great Central Plains.

Detroit's immigrants are factory workers—Poles and Slavs, Russians and Greeks, Italians, Negroes.

Los Angeles is the new home of Iowa farmers and Illinois small towners, Mississippi river flood-dodgers, Michigan cold sufferers.

Those who flocked to Detroit in such numbers sought work and high wages. Those who flivvered out to Los Angeles were hunting low prices and a comfortable place to live.

Because Los Angeles was populated by emigrants from the Bible Belt, militant religion has been ever present in, and largely responsible for, this amazing city.

It's because of the fanatical fervor of these church-goers that it still is said of Los Angeles that "it is not a city, but a state of mind."

As is generally the case, these emigrants from the tall corn country were schooled in a mental habit characteristic of their species: they defied and worshipped their surroundings and situation.

Back home hard work, self denial, and the absence of beauty had been their lot. Hence work became synonymous with godliness, the foregoing of pleasure was elevated to the status of piety, and the love of beauty was thought sinful.

Now. Dump your religious middle class family suddenly into the Promised Land. Beauty is all about him, and joy. He wakes up on a January morning not to shiver amidst bleak surroundings, but to stretch his arms in glorious sunshine, fill his lungs with rich, clean air, and to look upon turquoise hills and azure skies.

So *California* becomes his new religion. This is good, it is right, it is his, and the gospel should be spread to all the world.

Nothing is too good for his newly adopted land, nothing seems impossible there. Your mild, grim, tired Middle Westerner becomes an aggressive, arm-waving Californian, and he does things in the biggest way he can imagine.

Take the case of water. That has been the highest obstacle in the path of L. A.'s growth from the very start. But it didn't daunt these loyal new arrivals. The Lord was on their side.

First they borrowed $25,000,000 to bring the Owens river, 250 miles distant, to Los Angeles in a concrete channel. They paid for that. Then they borrowed still more to convert this man-made stream into an electrical power producer.

Next they wanted a harbor, which they didn't have. A book could be written on the obstacles preventing the development of a port for Los Angeles, and how these were overcome one-by-one.

That couldn't-be-done-but-they-did-it harbor now does a billion dollars worth of business annually! Next—Boulder Dam, for Los Angeles and all southern California must have more water, more hydroelectric power, to feed the growth of its manifest industrial and commercial destiny.

These mighty projects have not been initiated and carried through by cold-blooded planning on the part of titans of finance. No, they have been effected by the blind courage and faith of middle class people who worked together for a common purpose with a religion-fired crusading spirit.

Probably one and a half million persons are dwelling in the conglomerate of big towns which overlap and bump into one another to form Los Angeles.

Everybody drives a car out there. You have to, or you'll never get anywhere. Not even Detroit is so automobile conscious, or so difficult a city in which to get places.

In most cities there is a well-defined factory district, a commercial center, an automobile row. Not so, Los Angeles. Your first call will take you miles in one direction; your next is miles away in three other directions. Across from one factory is a cemetery; next door to another is a school playground and the home of a retired farmer.

What are the industries? Oil, steel, citrus fruit packing, rubber, machine tool making, and practically everything else in the catalog—with more coming.

And—oh yes—the movies.

* * *

Hollywood

Just what and where Hollywood is, we never did find out—exactly. One great picture studio is in Culver City, another in Burbank. Hollywood is apparently just a generic term for the motion picture industry of southern California.

Even more than Los Angeles as a whole, Hollywood is a state of mind. Showmanship pervades the efforts of the butcher, the baker, and the malted milk maker.

Floodlights, flowers, signs, action—everything seems to be waiting for the camera. The people behind the counter are just as folksy as their cousins back in Fort Madison and Danville—and talk with the same twang—but they've learned a new language and a new style of dressing up things, including themselves.

Inside the heavily guarded gates of the studios themselves you can drive around the world—at five miles an hour—in a half an afternoon.

Sections of South Sea Islands, the sidewalks of New York, the bay of Naples, Tarzan's jungle, the Arc de Triomphe, unter der Linden, the Barbary Coast just around the corner from Baltimore's whitewashed steps, the French Riviera on the same block with The First and Last Chance saloon in Red Gap, the first two stories of a modernistic skyscraper next to door to the kind of cottage Will Rogers invariably inhabited in his pictures.

It's all a mad dream—the world without backs or roofs, and fashioned out of Celotex and Beaverboard.

On the sets themselves—mammoth high-ceilinged barns—the electrician and the technician are in supreme command. Actors sit and wait and sit and wait while engineers manoeuver and measure and test; they work a few moments, they repeat and repeat the short performance, and then they wait patiently again while the technicians take charge again.

It's a make-believe world all right, but it's the creation of engineers and carpenters, electricians and handymen. Moreover, it is as orderly and smoothly run as an automobile factory.

The glamorous face you see on the screen really seems a small and insignificant part in the proceedings during the making of a picture—even though the possessor of that face probably draws a pretty fancy salary. Said glamor purveyor does what he or she is told—when the time comes—and then sits and waits some more.

In the barracks-like quarters of actors, directors, and executives occur the conferences and the planning, and they are much like the conferences held every day in business houses.

Not once during our visits did we see anything to remind us of "Once in a Lifetime" or "Boy Meets Girl"—the plays which pictorialized Hollywood thinking as a cross between Joe Cook's foolery and a Milt Gross comic strip.

Now as to the people. Listen to this:

We went to a Hollywood party. Among those present were a top-ranking female star and another who is soon to be Clark Gable's leading woman.

What did we do? First, we ate dinner—quietly, rather elegantly, and to the accompaniment of an urbane conversation which reminded me of dinner at a university Faculty Club.

And then—we played parlor games! The kind this writer hadn't played since Melba Taylor had her fourteenth birthday party back home in Marshall. Games involving spelling, mental manipulation of numbers, and new versions of the old "charades" formula. After tiring of that, there was some old-fashioned improvising around the piano, and home.

This was not a put-up show for a visiting reporter. These people were our friends of long standing, and simply took us into their own homes and manner of living.

Still tracking down the mythical wild Hollywoodean in his native habitat, we journeyed out to Palm Springs, a natural oasis in the midst of a painted, mountain-rimmed desert.

Here, underneath the most amazing set of stars you'll ever see, the "stars" of filmland gather to relax and forget their contract troubles.

What did we find? Dude ranches with guests swimming in pools, pitching horseshoes, practicing archery. A club where men took their tennis seriously, and in the bar of which we heard the most cultured and erudite conversation we had listened to in a long time.

Definition of Hollywood:

A benign locality in which business executives and engineering technicians employ the talents of the artistic temperament in the mass production of a profitable product—and, for the first time in the world's history, at uniformly altitudinous wages for the creative souls.

Echoes of the G-E-Warner Bros '42nd Street' Train in Editor's Visit to Hollywood

In the Spring of 1933 General Electric Co. staged a spectacular piece of promotion by a tie-in with the "42nd Street" special train which Warner Bros., movie producing company, toured across the country to publicize the musical photoplay of that name. Editor George Taubeneck got on the train at Chicago and rode through to the East, becoming intimately acquainted with a number of movie actors and actresses, whose friendship he has retained. When he was in Los Angeles some of these friends took him on a visit to a set where "The Green Pastures" was being filmed. From left to right (1) Bette Davis, Warner Bros. star, tries out the editor's car. (2) Bette Davis, Shirley Ross, featured M-G-M player, and Bob Nixon, assistant business manager of the News, on the set. (3) Shirley and Bob enjoy the show. (4) "De Lawd" visits one of his flock. (5) "Cab" Calloway was another visitor to the set on the same day.

Editor George Taubeneck's renewal of an old friendship in Hollywood is recorded by camera. (1) He climbs the steps to the hilltop home of Shirley Ross, featured M-G-M player. (2) Shirley and her mother, Mrs. Gaunt. (3) Ah-ha. George, the old smoothie, makes up to Mrs. Gaunt. (4) "Parting is a sad, sad thing," says the song, and it looks like it here. (5) "Goodbye."

Hard Selling, Hard Working Westinghouse 'Quota Busters' Corralled in Mansfield

(1) "Rancher" C. H. Brock (left) gets the key to the city from Mansfield's mayor. (2) J. D. Matlock from Globe, Ariz., real "quota buster" country. (3) Signs told the top-notchers of the various forms of entertainment that awaited them. (4) Pretty cowgirls dish out supplies from the "chuck wagon." (5) A more serious side of their visit. Salesmen see the manufacturing methods.

Westinghouse 'Quota Busters' See How Units Are Made

(Concluded from Page 1, Column 1)

ing shells being tested for leaks individually in a water-filled compartment, under 200 lbs. pressure. The housing castings are made in Westinghouse's own foundry, and are normalized by a special process.

Production of condensing units in the plant goes down a straight assembly line, with the various parts starting as individual pieces at one end of the line, and coming out as a complete unit at the other.

Crankshafts, of Nitroloy, are heat-treated to a hardness of 650, Brinnell test, and are ground within .0003 inch.

Connecting rods, one-piece forgings, are heat-treated, ground, and lapped within .0002 inch clearance. So, also, are pistons, which are made from solid bar No. 4 tool steel, and heat-treated. Just as a point of general information, it may be interesting to note that .0002 inch is about one-tenth the thickness of tissue paper.

Just down the line was the point where cylinders were ground and lapped within .0001 inch cylindrical. The cylinder castings are also made in the company's foundry. After the cylinders have been ground and lapped into almost glass-like surfaces, pistons and cylinders are matched, so that their maximum wall clearance is within .0003 inch.

Since the operations just described demand precision workmanship of the highest order, it is important to take note of the measuring devices used in the work. First of these is the electro limit gauge for cylinders. Its dial is graduated into eight zones, each zone covering .0002 inch. To make the gauge readable, the magnification of the instrument is 2,500 times.

Pistons are measured and graded on an optometer, calibrated in eight zones of .0002 inch each. Magnification of this instrument is 1,000 times.

Crankshafts are measured on another electro limit gauge, this one measuring three points in one operation, with a magnification of 5,000 times. All parts are tested for hardness on a Monotton hardness tester.

Each piston and cylinder, when graded and tested, is marked with a number from one to eight, to indicate relative clearances. On assembly, pistons and cylinders with the same markings are matched and used together. This assures accurate clearance in all units.

Across the aisle from the piston, connecting rod, and crankshaft operations is the winding department. There are three automatic winding machines for winding stators, each with a capacity of about 75 stators a day. In addition, expert hand-winders, about 20 of them, supplement the work of the machines. The automatic winding machine is said to equal the work of four hand-winders per day. Machines form and place stator cells in their slots, and also insert rotor conductors.

Each stator is tested for short circuits, opens, and grounds. A 500-cycle frequency is used on this test.

Assembly of compressor units is made in a dust-proof room, air conditioned, and having an air pressure 2 ounces per square inch greater than outside. When the doors to this room are opened, air flows out into the body of the plant, thus preventing infiltration of dust and assuring cleanliness and freedom from dust and grit.

After passing through the dust-proof assembly room, the compressor units are tested for leaks at 200 lbs. pressure. Then the units are placed in ovens, where they are dehydrated for a period of eight hours, at a temperature of 125° C. Units to be tested are connected in series of eight. Careful check is maintained to insure dryness of the air, measurements for dryness being made at –60° F.

Coming out of the ovens, the units are carried over to the charging stands, where refrigerant and oil are added. Charging machines are checked for accuracy three or four times daily. Units charged with F-12 are also checked 100 per cent for leaks, by immersion in hot water.

Next the units are given a performance test, being run for six hours to permit them to normalize at 100° F. After this, the units are connected to recording gauges and run for another six hours, to check pull-down, cycling, and temperature values. A chart record is kept on each unit.

Units are also given a noise test, and those which appear faulty in this respect, as well as in insulation, are rejected.

Those units using sulphur dioxide as the refrigerant are then given a final leak test, by means of anhydrous ammonia injected into a glass bell. If the unit leaks, a white vapor will rise, due to the chemical reaction of SO_2 and ammonia. After this, every unit gets a final and shipping inspection.

Right at the end of the assembly line is a "quality laboratory," object of which is to keep a constant control on quality. An average of 20 units per week is selected at random from stock, and is given rigid inspection and testing. Tests are performed in a 110° F. room by independent testers.

Units are mounted in refrigerator cabinets, and tested under actual service conditions. Faults that are found are called to the attention of the manufacturing department, so that repetitions will not occur.

Off in buildings adjacent to the main assembly line are the evaporator and condenser sections. In the evaporator section, the shells are first stamped out of a sheet, each stamping operation making one-half the shell. Sides of the shells are then seam welded together, after which the shells are spot welded throughout.

The shells then go to a pair of forming dies, which punch and shape the evaporators and roll their front edges. Next the evaporators are hooked onto conveyors and prepared for plating by being cleaned, "pickled," and washed. Then the units are plated, after which they are buffed, lacquered, and dried.

In the condenser section, the coils are finned, after which the assembly is plated.

Another interesting section of the plant is the engineering laboratory, in which units are put through various gruelling tests, at extreme temperatures, to determine their staying qualities. There are three test rooms in the laboratory—the first having a constant temperature of 95° F., with 95 per cent relative humidity; the second a temperature of –45° F.; and the third a temperature of 110° F.

In these rooms, engineering tests are conducted on insulation, cabinet finish, and current consumption. Both Westinghouse and competitive machines are tested, and their performances recorded by engineers for comparative information.

Over in still another part of the plant is the fan-assembly section, where the field and stator are wound, assembled, packed with wool fibers, and saturated with a five-year supply of oil.

All these operations, interspersed with lapping and grinding operations on wrist pins, cylinder heads, and suction and discharge valve heads, the Quota Busters saw at first-hand on their tour through the Springfield plant.

After the trip, the men were taken to the Kimball hotel for luncheon, and for talks by Springfield plant officials in the afternoon.

First speaker was Mr. Osborn, who emphasized the real effort which he said Westinghouse's Springfield plant was making to turn out a real quality product. Eighteen per cent of the people employed by the plant, he said, were engaged on production tests; 50 per cent of the plant's total production, he added, was devoted to refrigerator parts.

Mr. Osborn then introduced Acting Mayor Erhard, W. H. Scher, merchandising superintendent; E. L. Emmons, manager of the shop refrigeration division; and Charles Miley, chief inspector of merchandising division.

Each of the men connected with the plant told something of the tests which were continually being made to assure high quality of manufacture, and expressed pleasure that the members of Westinghouse's selling organization were being given this first-hand view of the care and precision which went into every detail of the manufacture of the product they sold.

The session was then turned over to L. H. Ashbaugh, manager of refrigeration engineering, and Section Engineers G. F. Fortshoefel, W. B. Anderson, and M. Kalischer, who gave a detailed explanation of the many technical instruments which they use to check and re-check engineering plans, and of the many problems which must be met and solved in the strictly engineering phase of refrigerator manufacture.

Even now, the engineering department is planning the Westinghouse refrigerator for 1937, the Quota Busters were told, to impress them with how far engineering must be ahead of actual assembly-line production. Tests on cabinets, insulation, hardware, and other refrigerator parts were explained to the salesmen.

R. E. Kruck, designing engineer, was final speaker on the afternoon's program, explaining to the men the problems connected with cabinet design engineering.

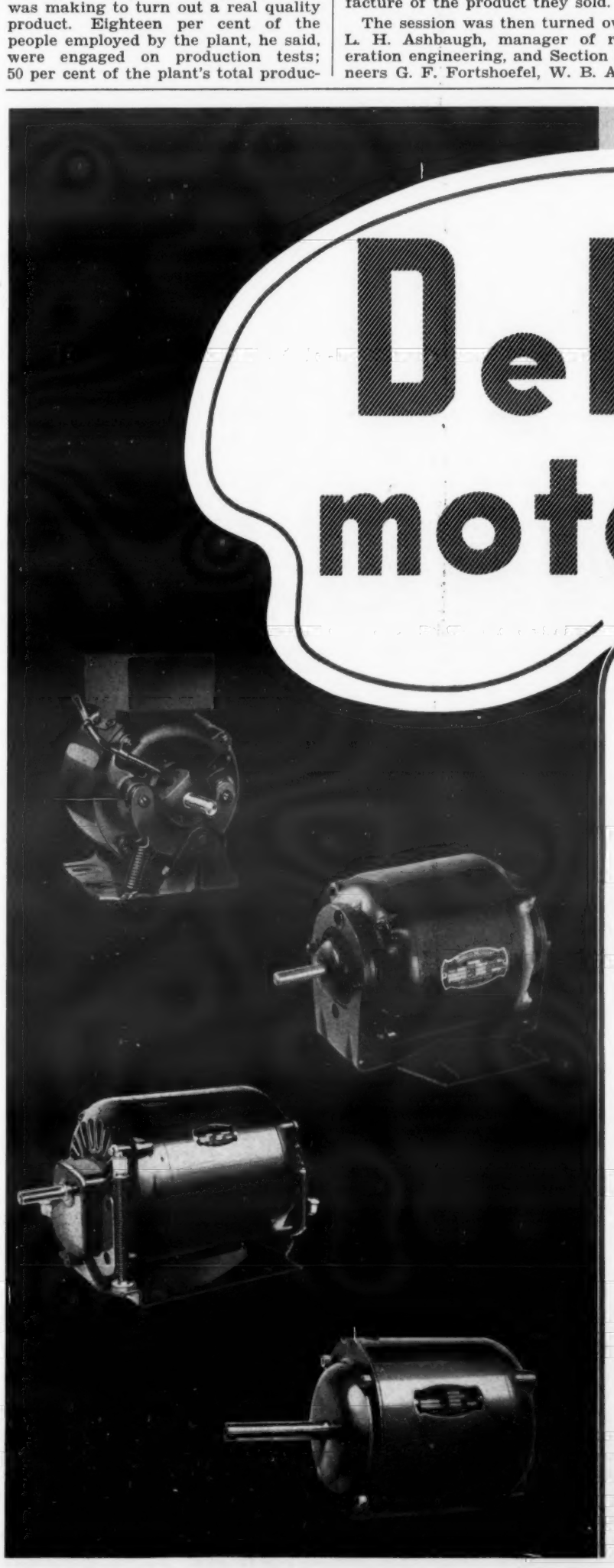
Climate as you like it with the Miller Conditionair all over the world.

See Ad Page 4

RELIABLE EXECUTIVE

of export firm going to England and South Africa can undertake for reasonable fee sales promotion, adjustments, investigations, surveys or similar confidential duties. Box 773, Electric Refrigeration News.

Delco motors



The manufacturer who standardizes on Delco is assured of an adequate supply of motors at all times. And if he makes any alterations in his product which require corresponding changes in his electric motors, he knows that these changes can be quickly and easily effected. For Delco production is so flexible that it can be keyed to the individual needs of any manufacturer — just as Delco *motors* are designed and constructed to suit the particular requirements of the various appliances for which they are made. Overshadowing all this, however, is the ruggedness and reliability of Delco motors themselves—a natural result of Delco's long engineering experience and wide production facilities—and one which is equally appreciated by dealers and manufacturers alike.

DELCO PRODUCTS CORP.
DAYTON, OHIO

Made in Canada by McKinnon Industries, Ltd., St. Catharines, Ont.

ELECTRIC
REFRIGERATION NEWS

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MARCH 4, 1936

Spring Possibilities

IT'S nice and sunshiny out today, the grass over on the Detroit Main Library lawn across the street from the home of the NEWS is beginning to show a tinge of green, youthful pedestrians are once more going bareheaded, and while we haven't seen any robins, we have a feeling that Spring surely can't be far away.

Those of us who reside in the so-called "temperate" zone of this country believe that if there is any justice, any law of compensation in Nature, we should be blessed with an early Spring, to make up for the terrific beating which the weatherman has handed us in the form of the six weeks of zero weather just passed. Incidentally, we trust that the old-timers who have spoken so deprecatingly of the mild winters enjoyed by the present generation are satisfied for once and for all.

If the winter—no matter how tough it *has* been—is destined to come to an end soon, all those who are connected with the electric refrigeration industry should give up a fervent vote of thanks. Memories of the prolonged cold spells of last Spring, which carried on through into June, probably bring a shudder to manufacturers, distributors, and dealers in the refrigeration and air-conditioning fields.

This reference to the depressing effects of a cold Spring on refrigerator sales should in no sense be taken to mean that modern, electric refrigeration can't be sold to the public in Winter months. Sales organizations for several years past have demonstrated that it *can* be done, and an ever-increasing portion of the public is apparently accepting the fact that electric refrigeration is a year-'round necessity.

Main barrier to sales which cold weather presents is a psychological one. It works on both the prospect and the salesman.

The *prospect* finds in such weather an excuse to put off his purchase. He is loath to tramp out in the snow and slush to view new models in the dealer's showroom. His foresight, or his imagination, just isn't strong enough to provide the necessary urge to make preparation for summer comforts.

Cold weather tends to dampen the *salesman's* ardor for his work. Since electric refrigerator sales work is "specialty selling" of the highest order, in which the salesman's activity in getting about and seeing people and the enthusiasm which he exudes when he does contact prospects plays an all-important part, the factor of the effect of weather on salesmen is nothing to be glossed over.

Sales managers have taken note of this decline of enthusiasm during the off-season periods of the year, with the result that sales contests, special promotion stunts, and other plans for stimulating the individual salesman to greater activity are no longer concentrated in the three or four months that mark the height of the selling season, but are spread out over the course of the whole year.

There was a time when the manufacturers' production schedules didn't afford much of an opportunity for early Spring sales effort, as new yearly models weren't introduced to the public until after the first quarter had passed, and sometimes not until May or June.

This situation has been greatly altered in the past two years, so that the present writing finds all the major makes either already introduced to the public, or ready to make their debut within a fortnight.

Another factor this year—more specifically this month of March—promises to make possible increased Spring refrigerator sales for those dealers who are financing sales under the FHA modernization loan program.

The act of Congress under which such loans are authorized is due to expire March 31. True, considerable effort is being made to extend Title II of the National Housing Act, and there seems to be about an even chance for this possibility as the matter shapes up now.

Most of the buying public, however, have not been made aware of these efforts to extend the Act, and many dealers are playing up the date of the expiration of the FHA loan program for all its worth. The situation somewhat parallels that of the late Spring and early Summer of 1933, just before the 5 per cent Federal tax on household refrigerator sales went into effect.

Retail sales organizations engaged in electric refrigeration selling at that time will no doubt remember that there was a backfire from the ballyhoo about "get your refrigerator before the tax goes into effect." Sales for six weeks *after* the tax did become effective were almost nil.

However, the situation with respect to the tax back in 1933 came right at the time of year when the refrigerator sales curve was reaching its natural seasonal peak.

The present special set of circumstances pertaining to a possible termination of FHA financing comes when the season is just swinging under way. The appeal is primarily to alert buyers who want to take advantage of an opportunity before it vanishes—people who are planning to buy anyway—and if the dealers do sell a goodly number of such prospects, it means that they will be cleared out of the way to allow the dealer to work more intensively on the slower type of prospect later in the season.

Even if the FHA financing program on appliances is allowed to lapse on the date set for its demise, it should have no serious effect upon prospects who have been made aware of FHA terms, as the credit companies outside of the FHA fold have been developing, and are putting into practice, time-payment plans with terms just about as attractive as those the FHA has offered.

With just a little "break" from the weatherman, prospects will be bright for refrigerator dealers during the next few months. Product refinements in the new lines of refrigerators have given the salesman a real story to tell this year, and those who get on the job to tell it first, and to as many people as possible, will undoubtedly have the most impressive sales records—and biggest incomes—when the score is added up at the end of the year.

People are always speculating on the weather, so it looks like a safe bet for salesmen (especially those interested in comfort cooling) to remind folks of the theory that the fluctuations of temperature tend to strike an average for the year and that the distressingly cold winter forecasts of a blistering hot summer. In any event, the customer should be so pleased with his purchase that he will be glad he did not wait longer.

Letters

Mistake in Titles

The Shield Co., Inc.
El Paso, Texas
Feb. 24, 1936.

Editor:

In the Feb. 12 issue of REFRIGERATION NEWS, Mr. Taubeneck in his El Paso, Texas, article referred to me, A. S. Douglass, as "The District Representative of the Crosley Radio Corp." This statement is erroneous as Mr. Harry L. Roper, San Antonio, Texas, is the Crosley Radio Corp.'s representative for this territory. I explained to Mr. Taubeneck that I was the District Representative for The Shield Co., Inc., distributor for Crosley radios and refrigerators. I am at loss to understand why Mr. Taubeneck made the statement.

In fairness to the Crosley Radio Corp. and Mr. Harry L. Roper may I ask that you correct Mr. Taubeneck's statement.

A. S. DOUGLASS,
District Representative.

Discrepancy in 1935 Sales Figures

State Street Research & Management Corporation
140 Federal Street
Boston, Mass.

Editor:

As subscribers to the ELECTRIC REFRIGERATION NEWS, we would appreciate it greatly if you would clear up the following points on your statistical records:

1. Do the 23,031 units sold in 1935 by the commercial refrigerator industry exclude some portion of commercial machines? The reason I bring up this point is because December sales of 1,680 do not check with December sales of 5,004 sold by 19 manufacturers.

2. Are sales of commercial units included in your 1,688,600 figure reported for United States refrigerator industry for 1935?

3. Regarding your 1,688,600 units reported for the 12 months, I find that adding the December figure of 79,200 units to your 11 months' figure does not give the 1,688,600 units you state is the 1935 total.

Will you kindly forward to me the revised 1935 and 1934 monthly units sales. THEODORE F. DRURY.

Answer: We will answer the questions in the order in which you have brought them up:

1. The 23,031 commercial *refrigerators* sold in 1935, as reported in the Feb. 12 issue of ELECTRIC REFRIGERATION NEWS, does not include any machines or *commercial refrigeration units* at all. A *commercial refrigerator* is a refrigerated display case, wall cabinet, or sectional cooler of the type used in markets, etc., but it is not a machine. A *commercial refrigeration unit* is a machine, and furnishes the refrigerating cooling effect for a *commercial refrigerator*.

In most cases the *commercial refrigerator* and the *commercial refrigeration* unit are made by different companies: sales of these two very different items are reported separately, and to two different associations.

2. Sales of commercial refrigeration units are *not* included in our estimate of sales of 1,688,600 household electric refrigerators by United States manufacturers during 1935.

3. Your statement that the addition of our estimated December sales to our eleven months' figure does not give our estimated total for the year is correct.

Near the end of the year we obtained some new data on which to revise the basis for our estimates. We then decided to use this new basis in our estimate for the year, with the result that this estimate for the 12 months' period does not jibe with the total that would be realized if our estimate for each of the 12 months were added up.

The new basis for our estimate was used in calculating the totals for November and December, but not for the other months of 1935. Our other monthly estimates we now believe to be about 2.2 per cent higher than they should have been.

Letters from Readers Around the World

Grunow Distributor in Hawaii Gives a Party

Electric Supply Co., Ltd.
Established Since 1919
Electrical Contractors
1186-88 Nuuanu St., Opp. Liberty Theater
Grunow Super-Safe Refrigerator
Honolulu, T. H.
Feb. 13, 1936.

Gentlemen:

We have had a real pleasure of meeting and entertaining your editor, Mr. George Taubeneck, during his stay here on his tour around the world.

Although Mr. Taubeneck was very busy, he accepted our invitation to be the guest of honor at a real typical Japanese-Hawaiian Teahouse Party, a picture of which we are sending you under separate cover showing part of the group. Standing left to right, are Mr. Taubeneck; Mr. Emmats; Miss Shiraki, secretary; Mr. H. K. Ichida, president-manager of the Electric Supply Co., Ltd., Territorial Grunow distributor; Mr. Christensen; and Mr. Paul Lindner of Geo. H. Eberhard Co. of San Francisco.

Mr. Taubeneck and his two Detroit friends commented on the keen entertainments. They marveled at the agile and graceful motions of the Hula dance and the beautiful strains of the steel guitar.

All the guests, who were business men and financiers, commented on his personality and his elegant speech.

Trusting that we shall have the opportunity of meeting Mr. Taubeneck again in the near future.

H. K. ICHIDA, Pres.-Mgr.

(*Publisher's Note*: For further details on the nature of this party, see picture on page 1.)

A Booster for Auckland Wants George to Call

James S. McAlpine, Ltd.
(Successors to McAlpine & Moors)
Consulting Engineers—Specialists in Electrical Refrigeration—Installations and Overhauls
Direct Importers, Manufacturers and Stockists of Spare Parts and Refrigerants For All Makes of Refrigerators
Emily Place, Auckland, New Zealand
20th January, 1936.

Mr. Taubeneck:

We read with interest your letter dated Nov. 25, 1935, that you are contemplating a trip 'round the world. We look forward very much to meeting you when you pass through our city. There are many places of interest in this country which you should endeavor to see if you have the time here.

South of Auckland is situated the Rotorus Thermal District containing many natural geysers, boiling pools, and hot and cold lakes. The Rotorus township has one of the finest golf courses in Auckland, while there are many fine licensed hotels at which to stay. There are trout fishing and bathing appointments which are the best in the country.

The Auckland district is by far the largest market for electric refrigeration, but quite good business is done down in the Wellington, Taranaki, and Hawkes Bay districts. If you are visiting Auckland by the Matson Line whose ships only call at Auckland and stay for a few hours, unless you break your journey here, you would have very little time to see much of our country and I feel sure that you would be quite justified in timing to stay at least a week, if not a fortnight here.

If you will be good enough to let us know before hand, the exact date of your arrival in Auckland, we will endeavor to arrange a few days outing for you to see our city and meet people connected with refrigeration business. JAMES S. MCALPINE.

Trip Is Heralded

Henry Berry & Co. Proprietary Ltd.
515-7-9 Kent St., Sydney and at Hunter St., West New Castle
Salt Merchants; Butchers', Bakers', and Soda Fountain Supplies
Melbourne, Adelaide, Perth, Brisbane, and in N.Z. at Dunedin, Invercargill, Wellington, Christchurch, Auckland
3rd February, 1936.

Mr. Taubeneck:

Mr. A. C. McRae, who is one of our regular Travellers, has passed over to the writer your letter addressed to him, dated 25th November, 1935.

Although the writer is not a subscriber to your Journal, never the less, he has had several opportunities of perusing copies supplied by Mr. McRae and has found them very interesting.

If you are in Sydney on your world tour, the writer would be only too happy to meet you as he has been associated with refrigeration now for nearly 20 years and is always interested in the progress of this very interesting study. G. W. OLIN.

"Surely do enjoy reading the NEWS—and it's going to be doubly interesting to follow Editor Taubeneck on his world tour—his No. 1 story of his 'World Series' was surely interesting."—Morten L. Moe, 705 North 50th St., Seattle, Wash.

Master Service Manual In Italian

Prof. E. Micheli
17, Via Agnello, Milano, 103
3rd February, 1936.

Publisher:

I have to acknowledge the receipt of your honored favor Dec. 30, 1935, and of the Copy of Jan. 1, 1936, of ELECTRIC REFRIGERATION NEWS for both of which I desire to thank you most sincerely.

It was extremely good of you to acknowledge my letter at all, and more so for couching it in such kind terms as you did; but when you added to it the generous action of publishing my letter in your important Journal, you have done something for which I feel I am in your debt to an extent I shall never be able to repay.

I have communicated the information concerning the York Shipley Limited to the Firm who had asked me to try and obtain for them and they wish me to thank you also for it. The Firm in question happens to be one of your subscribers, as per attached slip; so you can see that the enquiry was a genuine one.

I have translated the MASTER SERVICE MANUAL by commission of the above Firm, up to that part which is contained in your issue of Nov. 20, 1935. At present the work is in shorthand, as I have dictated it to the stenographer, but the Firm will get it transferred in type as soon as I have finished translating it and a carbon copy shall then be sent you with pleasure.

Incidentally, I have been requested to ask you what steps the Firm should take to obtain permission to print and publish the work in book form. If, on this point, you should prefer to write to the Firm direct, do so, by all means.

Now that business relations with England and the Countries within the British Empire have completely ceased, there should be a decisive increase in business between your Country and this.

I have not yet received any enquiry from any American firm anent my letter but I hope I may receive one soon, for things are so bad, just now, for us poor teachers of the English language, that it is no exaggeration to say, to put it mildly, that we find it very hard to make both ends meet.

The Chief Engineer of the "Stabilimento Fantini," who is also its Managing Director, has assured me that as soon as the "Refrigeration" season sets in—which will be in about a month or so, he will make enquiries around the Trade to obtain the information you desire and it shall be communicated to you forthwith.

I have noted that Mr. Taubeneck, the Editor of ELECTRIC REFRIGERATION NEWS, will be in Milan about June prox. May I hope that he has my name and address so that I may place such poor services as I can render at his complete disposal during his stay in this city?

Again thanking you most warmly for your great kindness and courtesy to me. E. MICHELI.

A Brother Editor Offers His Services

Cold Storage and Produce Review
Empire House, St. Martin's-Le-Grand, London, E. C. 1
Telegrams, Raymondise, London
January 23rd, 1936.

Mr. Taubeneck:

I have to offer you an apology for my apparent discourtesy in failing to reply to your letter of November 26th last. When your letter arrived I was absent from the office owing to illness, and on my return later, by some means or other, your communication has been overlooked in my arrears of correspondence.

I hasten to say that I shall be very pleased to give you any introductions that I can on your arrival in Europe. As I suppose that you will now be on the point of making your journey, perhaps it will be best if I wait until I see you before making any suggestions and giving you any special introductions at points you may be visiting.

In any case, I wish to say how much I look forward to seeing you, when I trust I may be able to be of some slight service in the direction which you suggest.

Wishing you a pleasant and successful trip, and with compliments, I am, yours sincerely,

J. RAYMOND, Editor-Propr.

'Happy to Assist'

Nock & Kirby, Ltd.
417-421 George St., Sydney
20th January, 1936.

Mr. Taubeneck:

I was very pleased to receive your letter dated 25th November, and trust that you will call and see me should you visit Australia, when I shall be happy to assist you in any way possible. NORMAN NOCK.

Kitchen Bureau Gives Promotion Ideas In 'Plan Book'

NEW YORK CITY—Suggestions for bureau operation and lists of promotional and advertising material have been compiled for local agencies of the National Kitchen Modernizing Bureau in its "Plan Book" recently issued by the Edison Electric Institute and Nema, bureau sponsors.

Coming as the first step toward active organization of the sub-bureaus which will promote the sale of electric refrigerators, ranges, and other electrical appliances, the plan book is a followup on a more comprehensive study of bureau plans, "The Prospectus."

"The Courage of Kay," a four-reel sound film, emphasizes the theme of the movement to popularize modern electric kitchens, and is offered to the local organizations as one of the promotional aids sent out by the central offices at 420 Lexington Ave., New York.

Designed to be shown at free morning performances in local motion picture theaters, at the dealer's display room, or to women's clubs, church guilds, parent-teacher groups, and in connection with cooking school and home service meetings, the film may be purchased at prices ranging from $69 to $150, and rented for from $12 to $30 per week, depending on the type of film.

As part of the program to catch public interest, mats and proofs of newspaper advertisements will also be prepared by central headquarters and sent to local officials for 30 or 35 cents. The advertisements will be prepared for re-adaptation by the local bureaus and will be designed to call attention to the modernizing program in its entirety, and to the model electric kitchen, as well as to inform the public about kitchen planning.

Electrotypes and mats of the Kitchen Modernizing Bureau emblem for use in advertising, letterheads, and envelopes are provided in three sizes at cost prices of 50 and 10 cents; for 80 cents, gummed emblem stickers in gold and black will also be distributed.

For window and counter displays, an emblem sign for 50 cents, a bureau membership sign with easel and hanger for 85 cents, and a lithographed cut-out of a model kitchen in full colors for $2.30 will be sent to local organizations requesting them.

Electrical transcriptions of 13 radio broadcasts, 15 minutes in length will also be supplied at cost if there should be sufficient demand, the plan book informs local groups.

As a further help to scientific kitchen modernizing, another book, entitled "Plans For Electrically Modernized Kitchens," to be issued later, will contain coordinated plans for actual electrified, modern kitchens as produced by the planning service departments of leading equipment manufacturers and various magazines.

Harry Alter Co. Issues New Catalog of Parts & Supplies

CHICAGO—Under the title "Refrigeration Parts and Supplies For All Makes," The Harry Alter Co., manufacturer and jobber of parts and accessories for commercial and domestic refrigeration, has issued its 1936 spring catalog No. 114 in a new large size (7¼x10¼—86 pages).

Compressor parts for Frigidaire, Kelvinator, King-Kold, Absopure, Servel, and Majestic, as well as replacement parts for the complete lines of other nationally known manufacturers are shown.

The first section of the new book, which is devoted to fittings and valves, piston pins, rings, and sylphon seals for all makes, is followed by illustrations and descriptions of exact replacement parts for specific makes.

Seven full pages display cold controls carried by the Alter Co. Other sections describe a complete line of repair tools, as well as small parts, and refrigeration hardware.

Refrigerator accessories, refrigerants, shop equipment, and lacquer and spray equipment are covered.

All publications of Business News Publishing Co. and other books on refrigeration and air conditioning are listed and illustrated on the inside back cover. All Harry Alter stores carry these publications (including ELECTRIC REFRIGERATION NEWS) in stock for over-the-counter sales.

10 Kelvinators Installed In Hotel Rooms

MANDAN, N. D.—Ten Kelvinator electric refrigerators recently were installed in the Lewis and Clark hotel here as a result of sales efforts of Walter Renden, district manager of North Dakota Power & Light Co. at Bismarck, and Mr. Windgren, manager of the company's local store.

Johnston Buys G-E Distributorship

MEMPHIS, Tenn.—Wallace Johnston, head of the refrigeration distributorship here which bears his name, recently purchased the business of the Tennessee Appliance Co., former General Electric distributor.

The Johnston company will handle the entire line of G-E home appliances. Mr. Johnston plans to add 20 persons—including 15 salesmen and three service men—to his present staff. James Leach will head the sales force.

Adams Designs Range For Electrochef

DETROIT—New addition to Electromaster, Inc., line of Electrochef electric ranges is "The Sixty," designed by Wilbur Henry Adams, industrial stylist of Cleveland.

The new model is finished in porcelain enamel; and every part, the manufacturers claim, is rust-proof. Switches are set in a two-tone chrome-plated panel, with oven and door handles finished in satin chrome and bakelite.

Stanley Radio Adds Refrigerator Line

BALTIMORE—Stanley Radio Co., 700 Madison Ave., formerly dealer for auto radios only, has expanded its operations to include refrigeration and air-conditioning equipment.

Fred S. Decker, formerly with House Electric, Inc. here, will manage the new division.

A. P. Fischel, Thomas Patterson, George Mason, and A. R. Seliger have been added to the sales organization.

Norge products including refrigerators, oil burners, and appliances, and a complete line of both General Electric and Hotpoint products, will be carried.

Dalton Made Kelvinator District Representative

BALTIMORE—Jack Dalton, formerly district representative in this area for General Household Utilities Corp., has been appointed district representative for the Kelvinator Corp., with headquarters at Southern Wholesalers, Inc., Baltimore and Washington Kelvinator distributor. His territory extends to Pittsburgh.

Edwina Nolan Conducts Meetings for Home Economists in Florida and Texas

CLEVELAND—Miss Edwina Nolan, director of the General Electric Co.'s home service division at Nela Park, recently returned from a trip to Florida and Texas where she conducted a series of meetings for members of home service departments of leading utility companies in these states.

Forty home economists attended the cookery demonstration which Miss Nolan held in the display kitchen of the Dallas Power & Light Co.

Miss Nolan spent part of her stay in Dallas training retail salesmen. This type of activity is given special attention by the power company's home service group, headed by Mrs. Jessie Pierce, who conducts classes in which the salesmen do the cooking and learn how to use electrical appliances, as a basis for their selling work.

Speedster Range Previewed

The Edmundson Refrigeration Co. of Houston, Tex., held a preview showing of the new G-E Speedster range in connection with Miss Nolan's home service meeting in that city.

Two Florida meetings—one in St. Petersburg and one in Miami—were included in Miss Nolan's program. Members of the Florida Power Co.'s home service department came from Clearwater, Winterhaven, and Tampa, to attend the St. Petersburg cookery demonstration, held in the all-electric kitchen of the home of George Patterson, G-E distributor for the entire state of Florida.

Cooking Schools for Maids

Special activities featured by the home service department of the Florida Light & Power Co., visited by Miss Nolan, include cooking schools for colored maids, and classes for club women. Prospect names are also secured through the calls made by Miss Huetta Armstrong, who contacts residents in apartment buildings to check on old ranges, and who investigates high bill complaints.

Short stops in Miss Nolan's itinerary were made at Ft. Worth, Tex., where she was the guest of Mrs. Ruth Stienhauser, public relations manager of the Community Public Service Co., and in New Orleans, La.

Combustioneer is Going Places!

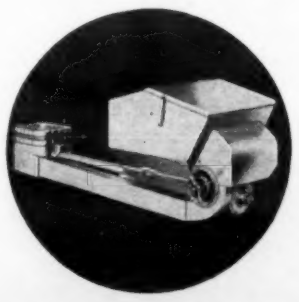
Come on Along for Profits

Combustioneer, pioneer maker of Automatic Coal Burners, has what it takes to give you the plus profits from a great ready-to-buy market for economical automatic heat.

Today Combustioneer is ready for a record year with a new enlarged factory, new increased production facilities and new and modern product development.

And today Combustioneer is going places with a hard-hitting merchandising program including new, aggressive advertising, new all-season sales plans and new dealer selling helps.

Combustioneer blankets the market for Automatic Heating with a complete line of 11 models sized for every heating need. Yes, Combustioneer is going places. Why not get all the facts about the Combustioneer franchise—and come on along for profits. Combustioneer, Division of The Steel Products Engineering Company, Springfield, Ohio.



Combustioneer Automatic Coal Burners

Commercial Uses

Proper Coil Installation Practice For Commercial Systems

CHICAGO—Correct practices in the installation of cooling coils for commercial refrigeration jobs are outlined in the first part of "Installation of Commercial Equipment, Work Sheet No. 20" in the commercial refrigeration series of the refrigeration home study course prepared by the Refrigeration and Air Conditioning Institute of this city. Such factors as coil supports, air space allowances, placing of coils, etc., are covered. The latter half of information given in the work sheet will be presented in a future issue of ELECTRIC REFRIGERATION NEWS.

Coils which are to be placed in walk-in coolers, display cases and counters, and reach-in or service cabinets must be of such overall size as to leave at least 1 in. space on all sides.

On the side or end of the coil carrying a control valve it will be necessary to leave 3 or 4 in. additional space. Where connections are made to both ends of the coil, a condition found with an uneven number of tubes, it will be necessary to leave about 2 in. extra clearance so that the suction and liquid lines may be attached without trouble.

Starting with the dimensions of the compartment or space in which the coil is to be placed, and subtracting the required clearances at the ends, sides, top, and bottom, will give the maximum possible dimensions of the coil which may be properly installed.

The baffling already in place and any new baffling to be installed must be carefully considered. Of course, the coil selected must not extend out beyond the drain trough so that moisture might drip into the food cabinet spaces.

Usually it will be possible to select any one of several shapes and sizes of coil, all having the same cooling ability in B.t.u.'s. The differences will be due to different sizes of tubing, to different fin sizes and spacings, and to general factors. Coils which are shallow, which are as wide as allowed by the compartment, and of a length equal to 70 per cent or more of the compartment length, are to be favored.

Coil Supports

For various reasons it may be advisable to use two coils whose combined cooling ratings equal the total required capacity. If two coils are placed side by side it will be possible to get better air circulation or to get more air in contact with the surfaces by mounting one coil slightly below the other.

If one coil has to be hung below another one, both should go through their cycles simultaneously and they should work on a defrosting cycle. If the lower coil remains cold while the upper one defrosts, the lower one will soon become covered with ice and will lose efficiency.

When you install a single coil which is quite a lot smaller than the bunker compartment, locate it approximately over the center of the horizontal baffle, not nearer to one edge than to the other.

Most of the newer cabinets and coolers have coil mountings built into them. Otherwise a workmanlike job can be done by installing coil supports made from galvanized and pipe fittings.

The coils may be held in position by aluminum wire, and in many cases the sole support may be by means of aluminum wire with ceiling hooks or eyelets.

Short coils will have sufficient support when hung only from the two ends, but long coils must have an additional support in the middle.

Supporting brackets may be attached to the cooler walls or ceiling with lag screws and the coil then attached directly to the brackets or hung from the brackets.

Coil supports of iron or steel must always be galvanized or hot tin dipped to prevent rust. There is danger of objectionable odors if the brackets and supports are painted.

Fan type cooler coils may be set upon a shelf located in a suitable position since there is forced circulation of air through the coil from back to front.

However, finned coils must never be set down upon any solid shelf because circulation depends on the cooled air passing down through the coil and out of the bottom.

Once in a while you will find a cooling coil supported by wires passed around only one or two tubes, a practice which is almost certain to cause damage and strain.

If it is necessary to support a coil by the tubing because of the absence of any points for attaching hangers, you must run the support underneath a full row of tubing so the strain is well distributed.

A good support for small coils of light weight may be made with pieces of ½-in. diameter tinned copper tubing on which the ends are flattened out and drilled or punched with the required bolt holes. Cross supports may then be of ¾-in. galvanized pipe. The ends of the flattened tubing may be looped around the pipe and the ends of the loop held with bolts.

Any coil which has a header must be installed so that the headers are perfectly horizontal to insure correct distribution of refrigerant. Of course, this rule applies also to all flooded evaporators which are mounted in coolers or cabinets. Some of the front flanges on large headers are provided with bolts for supporting the header and coil, but it is a good idea to provide additional hangers at the other end of the header to relieve any possible strain.

Drier Coils

In dry expansion evaporators it is assumed that all of the refrigerant evaporates and changes to a gas between the expansion valve and the suction end of the coil. However, when the coil is completely wet so that the last of the evaporation takes place right at the end of the tubing, the gas entering the suction line is cold enough to cause this line to sweat or to condense much moisture from the air onto its outer surface. This condensation makes an objectionable drip from the suction line after it leaves the evaporator coil.

To confine this condensation and dripping to the coil compartment and to allow the water to be carried away with condensation from the evaporator it is customary to provide drier coils.

A drier coil is simply a continuation of the same size of tubing used in the suction line, with this part of the tubing located directly above the main part of the evaporator so that warm air entering the cooling coil passes first over the drier coil. The gas leaving the evaporator warms sufficiently in the drier coil to prevent excessive chilling of the regular suction line. The drier coil plays no part in the refrigeration of the cabinet and is not part of the evaporator tubing.

The thermal bulb for the expansion valve is attached to the end of the evaporator tubing, before the drier coil, and never to the end of the drier coil where it enters the suction line.

The drier coil may simply be laid on top of the evaporator tubing, or it may be supported on the hangers which carry the evaporator. Supporting the drier coil a little ways above the cooling coil is preferable because it prevents the drier from being chilled from the cold metal of the evaporator.

Drier coils consist of from 10 to 20 ft. of tubing, the greater the evaporator capacity the longer the drier coil tubing.

The drier coil is made just long enough to prevent condensation, since excessive length here will increase the pressure drop between the evaporator and compressor.

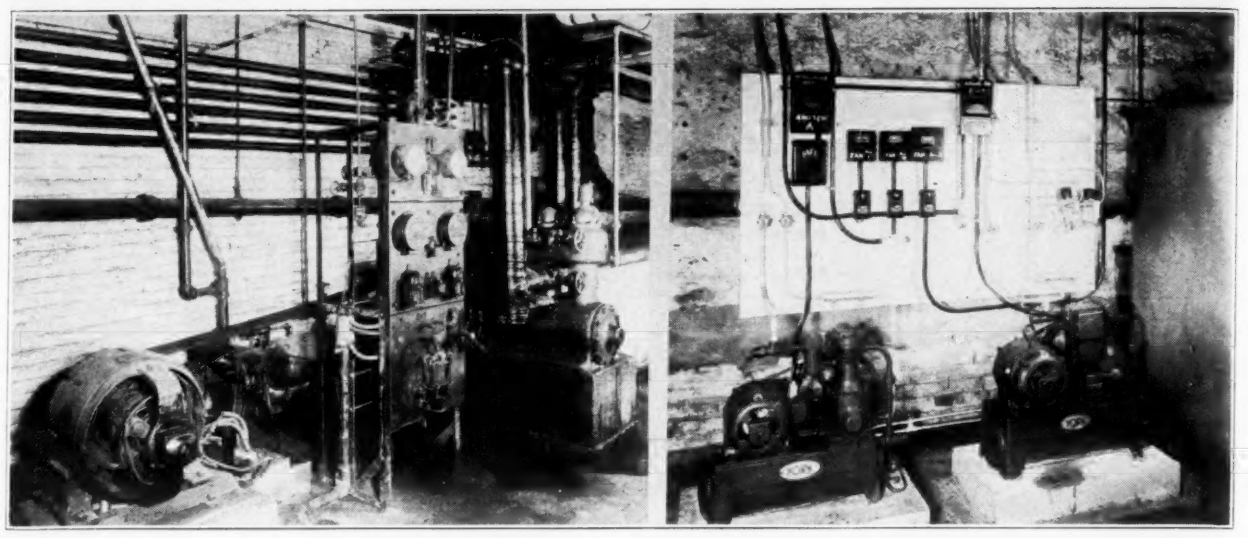
MILLER CONDITIONAIR
The aristocrat in appearance and efficiency, the plebeian in cost.
See Ad Page 4

Hunker to Manage Cole Commercial Sales

CLEVELAND—Paul A. Hunker, for the past two years head of water-cooler sales of General Electric Co.'s commercial refrigeration section, with headquarters here, has been named manager of the commercial department of Rex Cole, Inc., New York G-E distributor.

Previous to coming with G-E's commercial refrigeration section, Mr. Hunker was head of the water-cooler department of R. Cooper, Jr., Inc., G-E Chicago distributor.

The Old Gives Way to the New - - - and Savings Result



At the left is the old-time system which furnished refrigeration for the S. S. Pennock floral shop in the nation's capital. At the right is the smaller, neater, and more economical installation which has replaced it. Cost of operation was more than cut in half, and considerable space was gained, the florist reports.

* * *

New Equipment Cuts Refrigeration Bill of Florist in Half

WASHINGTON, D. C.—Fifty per cent savings in the cost of cooling three floral boxes, and considerably less space-waste have been effected by the installation of modern refrigeration equipment in the shop of S. S. Pennock Co., florists here.

The new equipment was sold and installed by the Washington Refrigeration Co., distributor for York Ice Machinery Corp., to replace an old ammonia system.

The installation includes a 1-hp. Freon condensing unit connected to a fan-fin space-chiller in the first floor cooler, and a 2-hp. machine connected to four space chillers in the two basement floral boxes. These units are equipped with the necessary controls to maintain the temperature automatically at 40 to 45° F.

Under the previous system, cost of power and water amounted to approximately $1,000 a year. Operating costs under the new system are running approximately $350 a year.

This saving is partially due to the fact that the new system will not be required to make a small quantity of ice, as was required by the ammonia apparatus; but with due allowance for discontinuance of the ice-making tank, the distributor estimates that more than 50 per cent is being saved in the operating cost.

Completely automatic operation, and less space-waste are the two other factors which recommended the new system to the florist.

Pemco Gets Order from Nehi Drink Dealers

BLOOMINGTON, Ill.—Refrigeration division of Portable Elevator Mfg. Co., manufacturer of Pemco beverage coolers, has received an order from Nehi, Inc., beverage manufacturer, to supply Nehi dealers with electric bottle cooling units, reports Elmer F. Born, Pemco sales manager.

Finish on the cooling units will carry out Nehi's color scheme—yellow panels, black corner posts, and red and black lettering.

Eskew Will Represent Peerless in Northeast

NEW YORK CITY—Robert Eskew, formerly commercial sales manager of Graybar Electric Co., has been appointed district representative for the New England territory of Peerless Ice Machine Co. He will have offices at the company branch here.

Before his connection with Graybar, Mr. Eskew was formerly with Servel Sales, Inc., starting in the national service department and finally occupying the position of commercial sales manager in one of Servel's branches.

New Firm to Take Over American 'Z' Corp.

JERSEY CITY, N. J.—Z Processes Inc., a new company, has recently been formed with offices at 1 Exchange Place, here, to take over the American Z Corp.

The new company plans an aggressive development of the quick freezing processes of M. T. Zarotschenzeff, according to Charles H. Welling, president.

Other officers are Mr. Zarotschenzeff, vice president; Paul Abbott, treasurer; and Charles B. Hester, secretary.

For the present the business of the company will be conducted through its representative, Charles H. Welling & Co., Inc., 40 Wall St., New York City.

Parker Adds New Line Of Steel Coils and 4-Cylinder Unit

LOS ANGELES—In addition to the line of methyl chloride, Freon, sulphur dioxide, and ammonia compressors and convection coils which it has been manufacturing for some years, Parker Mfg. Co. this year has brought out a line of steel fin coils for use with Freon, methyl, or ammonia trunk-type compressors, and some four-cylinder compressor units with shell and tube water-cooled condensers.

The steel coils are available in a number of types for use in single glass meat cases, delicatessen cases, and restaurant, grocery, vegetable, or milk refrigerators.

The company has purchased the factory at 1926 East 7th St., and will operate from this headquarters.

Westinghouse Used in Home Rathskeller

ST. LOUIS—Completing touch in the new rathskeller in the home of H. W. Hagnauer here was a specially built refrigeration cabinet operated by a Westinghouse AFB-33H hermetically sealed compressor. Installation was a project of the A. R. Lindburg Co., Westinghouse distributor here.

Marlo Finned Coil Co. supplied the evaporator for the installation. Freezing trays are set on top of the fin-type coils.

A part of one of St. Louis's most striking rooms, the rathskeller has a blue and silver color scheme. Walls and floor are done in blue, while the silver accents are found in the chromium bar and in the frosted silver grille work on the stairway which opens into this basement room.

BRUNNER
Send for the New
REFRIGERATION CATALOG
Eight Models of Compressors
Forty-one Models of Highsides
from 1/6 H. P. to 15 H. P.
BRUNNER MANUFACTURING CO.
UTICA, N. Y.

LIFETIME COILS AND UNITS
KRACK ENGINEERED
CUSTOMIZED For Every Phase of Commercial Refrigeration and Air Conditioning
REFRIGERATION APPLIANCES, INC.
1342 West Lake Street, Chicago

M&E EST. 1866
COMMERCIAL DOMESTIC and BARE COMPRESSORS
1/6 to 10 H. P.
MERCHANT & EVANS CO.
MANUFACTURERS
PHILADELPHIA
EST. 1866 Plant: LANCASTER PA

FOUNTAIN REFRIGERATION At its Best

BECAUSE the daily routine of a busy soda fountain is a series of "rush hours" and "slack hours," this type of refrigeration puts the refrigerating unit to a severe efficiency test. Copeland Commercial Units in fountain service deliver superior performance. They are built to assure maximum flexibility. Thousands of Copeland units are now in fountain service. You should sell this great line. A few territories are available. Write today.

COPELAND REFRIGERATION CORPORATION
Manufacturers of a complete line of Household and Commercial Refrigeration
Holden Ave. at Lincoln . . . DETROIT, MICH.

Copeland
DEPENDABLE Electric REFRIGERATION

Terhune Tells Servel Distributors How to Reach Market

(*Concluded from Page 1, Column 4*)

new field, and took the audience on a mythical trip to an imaginary planet, from which, looking down, they might see things as they actually are. He warned distributors to get into the air-conditioning field in earnest, lest it be taken away from them.

The public today sees nothing unusual about heating; its use has become so wide as to be a commonplace, Mr. Ruthenburg said. Heating is only one phase of air conditioning—and already furnace manufacturers are beginning to go after this new business, he added, urging the distributors to recognize this situation, and assume leadership in a field which is rightfully theirs.

Concluding, Mr. Ruthenburg predicted a near-future day in which, he said, the cooling phase of air conditioning will be as commonplace a part in the daily life of man as is heating today.

Friday's sessions were devoted to general sales problems, with factory officials and leading distributors sharing the spotlight.

Mr. Terhune opened the meeting with a short address, introducing Mr. Newcomb, who told distributors the story of the factory and the 1936 line, emphasizing the fact that the Servel line of commercial refrigerating machines offers a broad selection of units for every type of application.

The Servel line, he explained, consists of nine air-cooled models up to and including 2 hp., eight standard water-cooled models, from ½ to 7½ hp., and eight special water-cooled heavy-duty machines ranging from ¾ to 10 hp.

Mr. Aulsebrook next told the distributors how to go about "Making Sales Capital of 'Quality Points'" in the Servel line, after which Mr. Olin gave them a simplified course in application engineering, as it applied to commercial jobs.

Separating "Suspects" from "Buyers"

"Reaching the Market" was explained by Mr. Terhune, who told the distributors of Servel's new retail survey plan, just being introduced this year.

The plan enables Servel distributors to separate "suspects," "prospects," and "buyers" in his territory at low cost, and gives him an effective means of sizing up his market, as well as of breaking in new commercial refrigeration salesmen.

The number of commercial establishments which at some time in their operation can or do use commercial refrigeration equipment in some form equals approximately 1 per cent of the total population, Mr. Terhune said. For example, a city of 500,000 population, within a trading area of 20-mile radius, will have in it about 5,000 commercial establishments.

With this as the potential market from which the distributor of commercial equipment can logically draw, Mr. Terhune went on to divide it into three classes: "suspects," 60 to 80 per cent; "prospects," 25 to 15 per cent; and "buyers," 15 to 5 per cent.

Briefly, the plan includes contact work by inexperienced salesmen with all potential buyers in a distributor's territory to determine their status as either "suspects," "prospects," or "buyers." The salesman is paid a small sum for each survey made, and a bonus on sales closed by more experienced men in the company.

In addition to giving the key selling men of the organization a chance to operate with a minimum of lost effort, the plan also makes the "green" salesman a profitable investment from the start, and at the same time gives him an effective practical course in salesmanship, which he may later wish to capitalize on as a full-time salesman for the company, at regular commissions.

After the survey has been completed, the "suspects" may be set aside for six months or a year, the "prospects" contacted through regular mailings and occasional personal calls to determine their drift toward the "buyer" status. The "buyers" should be gone after persistently until an order is received or until it is definitely known that the sale has gone to a competitor.

Cards of "buyers" who purchase equipment are then put in the "user" file, giving the distributor a permanent record of the achievements of each survey man and each key salesman, as well as being a source of reference information for new salesmen.

The survey plan, said Mr. Terhune, makes it possible for the distributor to accomplish the following objectives:

1. Reach his entire market each year at a predetermined sales cost and estimable results.
2. Maintain an accounting system to govern his selling operation.
3. Check results every week and every month, to control sales cost and build volume.
4. Obtain the names, addresses, and data on every suspect, prospect, and buyer in his territory.
5. Build up from these names a dependable, intelligent prospect list for sales campaigns that will be well directed, inexpensive, and effective, because of the elimination of suspects from the mailings.

Friday afternoon's meeting opened with Mr. Aulsebrook explaining to distributors Servel's 1936 sales promotion and sales campaign program. This includes survey sheets for walk-in refrigerators, milk cooling, grocer and wall refrigerators, comfort cooling, display and freezer counters, and auto bodies and trailers.

The session was then turned over to some of Servel's "Five Minute Men," distributors who had made outstanding records in various branches of commercial sales work last year. These men presented short outlines of their field experiences. Speakers and their subjects included C. U. Haverly, Syracuse, N. Y., "Milk Cooler Selling"; Cliff Matthews, Pawtucket, R. I., "Twelve Months' Selling Season"; I. R. Rechbrook, Philadelphia, "Prospect Getting"; J. E. Thompson, Boston, "Sales from Service"; and H. E. Humphries, Concord, N. H., "Rural Operation."

Three officials of Majestic Refrigerator Corp., Servel New York City distributor, explained the company's metropolitan operation. They were Murray Bergman, president and general manager; Samuel Lee, vice president and general sales manager; and Louis Coleman, secretary and service manager.

Saturday's sessions, devoted to air conditioning, selling, and engineering, opened with a short address by Mr. Newcomb, in which he explained the company's policy in air conditioning.

Mr. Aulsebrook then took over the platform to describe the 1936 air-conditioning market and the company's products and program for 1936.

There are no real "experts" in air conditioning today, Mr. Aulsebrook told the distributors, urging them not to stay out of the field simply because they thought it was too "deep" for them. Consumer acceptance of air conditioning, he added, is today getting around to the point where even the smaller merchants are interested in it. It is no longer a market of big installations alone, he pointed out.

Most of today's prospects, Mr. Aulsebrook said, are in the $1,000 to $2,000 class—restaurants, stores, beauty parlors, and the like. Refrigeration is the hardest angle of air conditioning to learn, he said; therefore, a foundation in commercial refrigeration is in itself a good start in air conditioning. "Get into the field," he urged distributors, "you're as well qualified for it as anyone else."

He then explained Servel's air-conditioning line, including a new product, the WAB-2000, a 20-ton unit, which will also be available shortly in 15-ton size. Most of the conditioning jobs in the next 10 years, he said, will be in the 20-ton class and under.

Defining air conditioning as "the simultaneous control of temperature, humidity, and circulation," Mr. Olin proceeded to give distributors a simplified course in air-conditioning calculation, much the same as he had done on the previous day with commercial application engineering.

Service Problems Explained

P. B. Reed, service manager, next spoke on service and installation problems, outlining to distributors a plan whereby, he said, "service can be put on a basis where it will not only be self-sustaining, but where it can be made to show a profit as well."

To make the service department pay, Mr. Reed said, it should be considered as a separate business apart from the sales department. It should have its own income, obtained from installation and service charges on new equipment; keep a definite record of service calls, and installation costs; it should check installations periodically, to see if they are operating properly, and it should not be burdened with sales "policy" expenses.

Mr. Reed advised distributors to build their service departments on well-trained efficient personnel. He also advised keeping on hand an adequate stock of parts commonly required for replacement, to accelerate service and insure customer satisfaction.

A. M. Schmitz, sales engineer, next showed distributors comparative data on Servel units, and on other unnamed commercial machines of comparative size.

After a short address by Andre Merle, consulting air-conditioning engineer for Majestic Refrigerator Corp., Mr. Terhune closed the conference with a short address on "The Name on the Dotted Line," after which distributors were taken on an inspection trip through Majestic Refrigerator Corp.'s new headquarters at 333 West 52nd St.

NEW!

Sell Westinghouse Water Coolers, and you have the edge on competition right from the start. For you are selling the only water cooler line with a 5-year protection plan.

WHAT A LINE!

Streamline Series

Water-cooled models, in three sizes, for severe, heavy-duty industrial operation.

Airline Series

Three capacities of air-cooled models, for normal service under ordinary conditions.

Micarta Series

The aristocrat, of strikingly beautiful appearance, for light service in De luxe surroundings.

Every model is powered by the famous Westinghouse hermetically-sealed mechanism, and carries the 5-year protection plan.

EXCLUSIVE FEATURES

increase sales and decrease maintenance

Exclusive water-cooled condenser, motor, and compressor, in Streamline coolers, do away forever with clogged condensers. Dust, dirt, lint, and grease just can't hurt them.

Exclusive large, unobstructed drain of ¾" pipe says "good-bye" to drainage troubles.

Exclusive dual-action evaporator replaces old pre-cooler, with its service problems.

Combine these three selling advantages with the economy and dependability of Westinghouse hermetically-sealed units, backed by the *exclusive* 5-year protection plan. Now you have a water cooler line that cracks down on sales resistance in every market, because they meet every need, and cost no more than *ordinary* coolers.

RIDE WITH A WINNER!

Rapid-fire promotion and advertising program starts April 1. Get lined up now with Westinghouse, for the biggest and most profitable water cooler year you ever had. Direct factory franchises are open in a few of the larger cities. See the Westinghouse distributor, or write to Westinghouse Electric and Manufacturing Company, ERN-3-4, Mansfield, Ohio.

Westinghouse

WESTINGHOUSE 1886 W 1936 GOLDEN JUBILEE

Golden Jubilee WATER COOLERS

Service Methods

Checking and Determination of Proper Refrigerant Charges In Air-Cooled Systems

New and Old Methods of Calculating Amount of Refrigerant Required and Theory Involved

By L. K. Wright, A.S.R.E.

THE problem of determining the proper refrigerant charge for an air-cooled installation has confronted and perplexed refrigeration service men as well as shop workers, since the advent of the small compression machine. For new apparatus assembled for regular production in the shop a specified weight of refrigerant is supplied each unit, this certain quantity being the result of careful calculation, study, and laboratory tests. It is not until such a unit has to be serviced in the field or removed to another shop for an overhauling that the problem of determining the correct refrigerant charge becomes paramount.

The smaller refrigeration units, especially small commercial and household sizes, are made as simple as possible. In many cases even the receiver is eliminated in order to simplify construction and reduce cost, in which event the condenser assumes a dual function, i.e.—acting not only in the capacity of a condenser but as a receiver as well.

Larger units generally employ receivers, but even these are rarely provided with any sight glasses or liquid level indicators. The absence of a sight glass on the receiver of a small unit obviously precludes any visual check on the charge held in the receiver, either in the operating phase or in "pumped down" condition.

Application of Rough Method

A quick method of roughly determining if the refrigerant charge contained in a system operating for some time has been employed by service men. This method is extremely crude and only rough approximations are possible. In many cases variances will result where different units are involved.

For low side float valve and automatic constant pressure expansion valve systems the rough method finds logical use within certain operating ranges, for the level of the liquid refrigerant in the receiver is not critical in either of these systems, so that a variance of a half pound of refrigerant more or less, produces little change in the effective operation of such apparatus. Normally, receivers should be from ¼ to ⅓ filled with refrigerant. With such a liquid content it will usually be found possible to store the entire charge in the receiver if it becomes necessary to "pump down" the system.

Where the receiver contains an overabundance of liquid, more than specified for normal charge, it may prove impossible to pump down the low side. The only recourse is to pump the surplus into an empty service cylinder or tank.

How to Make Use Of the Chart

Service men will find the "Refrigerant Chart" published on this page especially valuable in the servicing of "orphan" makes of machines, where it is necessary to replenish the refrigerant charge with no information available as to the quantity required.

The chart also provides a convenient method of determining the proper charge of refrigerant when the service man is called upon to handle a make or size of compressor with which he is unfamiliar. Mr. Wright also explains how the chart should be applied when there are unusual or abnormal conditions to be taken into consideration.

The chart is the result of several years of experimental work by the author on all types of air-cooled systems.

Receivers, or condensers, when forced to act in the dual capacity of condenser-receiver, require sufficient liquid to assure the liquid line being maintained full of liquid. This quantity is generally referred to as the liquid seal.

Use on High Side Float Systems

Again, if the rough method of estimating the correctness of refrigerant charge be used on a high side float installation, the operator will find it necessary to "balance" the system after allowing it to operate for some time. Should the suction line frost after the unit has operated for some time, but not sufficient to cause thermostat or pressurestat to cut off, some refrigerant would be withdrawn from the system and where a portion of the evaporator remained unfrosted a slight quantity of refrigerant would be added to the existing charge. This adding or extraction of refrigerant would be continued, after test runs, until satisfactory performance was secured.

High side float valve systems were not very popular a few years ago, but in 1934-1935 Kelvinator and Frigidaire turned to this type of throttle device. Servel had been an early user of high side floats and their installations proved the high side float an excellent refrigerant control.

The older high side float systems were invariably without receivers. New high side float designs make it possible to make use of the float housing or dome as a receiver when servicing the system, making it possible to "pump down" without removing the charge from the system.

High side float valve systems are known to be "critical of charge" by virtue of the fact that 95 per cent or more of the charge is held in the low side, so that any surplus or lack of charge shows up in the functioning of the evaporator.

Rough, Rapid Method

The rapid method of roughly ascertaining whether a system contains the correct refrigerant charge involves the use of a factor, adding or subtracting it from the room temperature and using the resultant figure as a rough indication of the required head pressure. An excess of pressure would serve to indicate (a) excessive charge, (b) dirty condenser, (c) air in condenser, (d) excess of oil, (e) fan blades bent, (f) wrong fan design or size, (g) motor reversed, (h) air duct from or to machine compartment blocked, (i) unit placed against wall cutting off air circulation, or (j) the discharge service shut off valve closed or almost front seated. Assuming the job contains the proper oil charge and that none of the previous causes other than (a) exist, a high head pressure reading resolves itself into a matter of refrigerant charge. An overabundance or excess gives a high head pressure reading, whereas a low head pressure indicates the lack of charge.

Procedure

The service man, in analyzing conditions, would make use of his pocket thermometer to secure the tempera-

(*Concluded on Page 15, Column 1*)

Refrigerant Chart

Saturated Conditions

"=Inches Vacuum. lb=Pounds Pressure Per Square Inch Gauge.

Temp. °F.	Sulphur Dioxide SO_2	F-12 CCl_2F_2	F-114	Methyl Chloride CH_3Cl	Iso-Butane C_4H_{10}	Carrene CH_2Cl_2	Methyl Formate $C_2H_4O_2$
— 40	23.5"	11.0"	26.1"	15.7"	21.0"		
— 35	22.4"	8.4"	25.4"	14.4"	19.5"		
— 30	21.1"	5.5"	24.7"	11.6"	18.2"		
— 25	19.6"	2.3"	23.8"	9.2"	17.1"	29.0"	
— 20	17.9"	0.5 lb	22.9"	6.1"	14.6"	28.8"	
— 15	16.1"	2.4 lb	21.7"	2.3"	13.0"	28.4"	28.0"
— 10	13.9"	4.5 lb	20.6"	0.2 lb	11.0"	28.1"	27.8"
— 5	11.5"	6.8 lb	19.2"	2.0 lb	8.8"	27.8"	27.2"
0	8.8"	9.2 lb	17.8"	3.8 lb	6.3"	27.5"	26.5"
+ 5	5.8"	11.9 lb	16.0"	6.2 lb	3.3"	27.1"	25.9"
+ 10	2.6"	14.7 lb	14.3"	8.6 lb	0.2"	26.7"	25.4"
15	0.5 lb	17.7 lb	12.3"	11.2 lb	1.6 lb	26.2"	24.7"
20	2.4 lb	21.1 lb	10.1"	13.6 lb	3.5 lb	25.6"	24.0"
25	4.6 lb	24.6 lb	7.5"	17.2 lb	5.5 lb	24.9"	23.1"
30	7.0 lb	28.5 lb	5.0"	20.3 lb	7.6 lb	24.3"	22.3"
35	9.6 lb	32.6 lb	2.0"	24.0 lb	9.9 lb	23.5"	21.1"
40	12.4 lb	37.0 lb	0.5 lb	28.1 lb	12.2 lb	22.6"	20.0"
45	15.5 lb	41.7 lb	2.2 lb	32.2 lb	14.8 lb	21.7"	18.7"
50	18.8 lb	46.7 lb	3.9 lb	36.3 lb	17.8 lb	20.7"	17.3"
55	22.4 lb	52.0 lb	6.0 lb	41.7 lb	20.8 lb	19.5"	15.7"
60	26.2 lb	57.7 lb	8.0 lb	46.8 lb	24.0 lb	18.2"	14.0"
65	30.4 lb	63.7 lb	10.3 lb	53.6 lb	27.5 lb	16.7"	11.9"
70	34.9 lb	70.1 lb	12.6 lb	57.8 lb	31.1 lb	15.1"	9.8"
75	39.8 lb	76.9 lb	15.2 lb	64.4 lb	35.0 lb	13.4"	7.3"
80	45.0 lb	84.1 lb	17.9 lb	72.3 lb	39.2 lb	11.5"	4.9"
85	50.9 lb	91.7 lb	21.0 lb	79.4 lb	43.9 lb	8.4"	2.4"
90	56.5 lb	99.6 lb	24.0 lb	87.3 lb	48.6 lb	7.3"	0.5 lb
95	62.9 lb	108.1 lb	27.5 lb	95.6 lb	53.7 lb	5.0"	2.1 lb
100	69.8 lb	116.9 lb	31.0 lb	102.3 lb	59.0 lb	2.4"	3.8 lb
105	77.1 lb	126.2 lb	34.9 lb	113.4 lb	64.6 lb	0.19 lb	5.8 lb
110	85.1 lb	136.0 lb	38.8 lb	118.3 lb	70.4 lb	1.6 lb	7.7 lb
115	93.5 lb	146.5 lb	41.4 lb	128.6 lb	76.7 lb	3.1 lb	10.4 lb
120	103.4 lb	157.1 lb	47.7 lb	139.3 lb	84.3 lb	4.7 lb	13.1 lb
125	111.9 lb	168.6 lb	52.5 lb	150.3 lb	90.1 lb	6.6 lb	15.7 lb
130	121.9 lb	180.2 lb	57.5 lb	161.3 lb	97.3 lb	8.4 lb	18.2 lb

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FOR SAFE DELIVERY OF AUTOMATIC REFRIGERATORS

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Pad .....$9.50 each
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Bars ..... 1.75 per set complete
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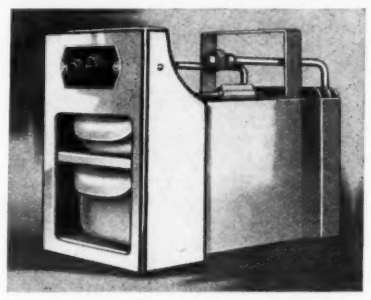

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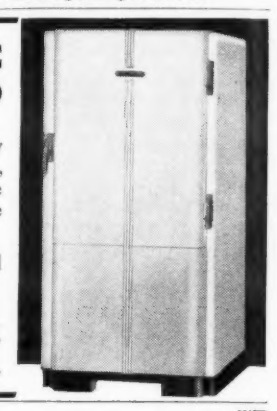

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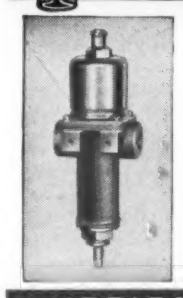

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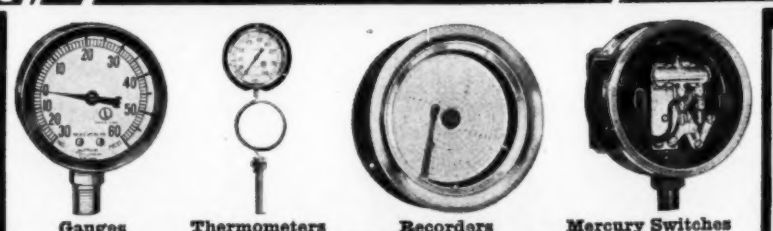

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Determination of Proper Refrigerant Charge in Air-Cooled Systems

(*Concluded from Page 14, Column 3*)

ture of the room in which the air-cooled condensing unit was located. While waiting for the thermometer to assume the temperature of the room a gauge test set (or only a high pressure gauge, usually 0 lb. to 150 lbs.) would be attached to the service port of the discharge service shut-off valve.

Assuming the room temperature to be 70° F. the service man would SUBTRACT 15 from this number (70—15=55) and then refer to the head pressure gauge reading to see if it approximated 55, if the unit was charged with sulphur dioxide.

Where methyl chloride and F-12 were involved, a factor would be ADDED to the room temperature.

The factors added or subtracted vary with the room temperature, being as follows:

Refrigerant	Room Temperature 50° to 80° F.	80° to 100° F.
Methyl chloride	add 15	add 25
Sulphur dioxide	subtract 15	subtract 5
F-12	add 50	add 70
Isobutane	subtract 15	subtract 10

The above methods apply to units operating with the refrigerant vaporizing in the evaporator at 5° to 10° F. Any variance from these evaporating conditions would nullify these factors and provide inaccurate pressure indications.

Basic Laws

To understand why a higher back pressure (suction pressure) will bring about an increase in head pressure (condensing pressure) it is necessary to refer to some of the elementary or basic laws.

First, it must be borne in mind that the lower the pressure in the evaporator or low side, the lower the vaporizing or boiling temperature. Raising the pressure on a liquid results in increasing its boiling temperature.

Second, holding the pressure constant will result in the liquid boiling at a constant temperature, the temperature being that which corresponds to the particular pressure involved.

Third, all liquids have constant temperature - pressure relationships. These are constant, so much so that knowing the temperature at which boiling or vaporization is proceeding, we can ascertain the pressure by reference to a chart. Or, knowing pressure, the corresponding boiling temperature can be found. If we check the chart we find both temperature and pressure figures are correct, provided the instruments are correctly calibrated and are not in error.

Fourth, the greater the differential between the refrigerant temperature (its boiling point) and the refrigerator or box temperature, the faster the heat flow.

Fifth, the greater the differential between the evaporator temperature and the refrigerator temperature, the faster the flow of the convecting air currents. Air wiping over the coil or evaporator loses heat, for the heat energy flows from the warmer air to the colder evaporator. As a consequence of impingement of air on the coil, with resultant loss of heat, the air (a gas) contracts or becomes denser.

The dense, cold air falls and wipes over foodstuffs and inner refrigerator wall surfaces, absorbing heat from them and in consequence becomes warmer and lighter, due to the expansion of the gaseous body. The light, heat-laden air rises and conveys the heat to the evaporator coil. This is a continuous cycle while the apparatus is in operation, and without convection our household equipment and most of the small commercial installations would be useless. Convection currents are necessary. Slow them down or hinder their path of travel by overloading the box, so that air currents cannot pass between the closely piled or packed goods, and improper refrigeration will result. Place paper or oilcloth on the shelves of a household box, thus hindering or entirely blocking convection currents, and a complaint will be registered because of poor refrigeration.

Sixth, the denser or heavier the vapor involved (i.e. depending upon pressure), the more heat it can absorb. Elucidation of this statement may be had by recourse to the Molecular Theory of Matter.

Molecular Theory

This theory is based on the assumption that all matter is composed of molecules and that all matter exists in one of three major forms, i.e., solids, liquids and gases.

A molecule is assumed to be the smallest independent particle of matter which can exist and still retain its identity. It is the individual molecules of a substance which absorb heat energy. In a solid comparatively little heat energy has been absorbed and as a consequence the molecules exhibit a strong attraction for one another, termed cohesion, which is somewhat similar to the attraction demonstrated by iron filings for a magnet. The attraction is so great in the solid form that a definite shape is held and considerable force must be used if the solid is to be bent, broken, or changed in shape. Molecules in solids, due to the slight heat content, vibrate at a comparatively slow rate of speed.

When a solid is provided with additional heat a point is reached where the vibrations of the molecules become so rapid that nearly all of the cohesive force is lost and the solid melts, that is, it devolves into the liquid form of matter. The transition of solid to liquid state is termed fusion.

All cohesion is not lost, however, for otherwise there would be no raindrops, but the force is so weak that the mass must have some container to hold it. The liquid will fill and assume the shape of the container, regardless of the irregularity of the vessel. Thus, in the liquid form the molecules are vibrating at a comparatively high rate of speed and exhibit but a faint degree of cohesion for one another.

Gas Phase

If the liquid be provided with additional heat a point will finally be arrived at which is termed the boiling point. This boiling point is the temperature at which another change of state occurs, the transition from liquid to vapor form. This change of state results by virtue of the absorption of heat, the individual molecules absorbing heat and speeding up their rate of vibration until the speed is so great that they fly off from the liquid and assume the gaseous state. In the gaseous form the molecules no longer exhibit any cohesive property. Instead, repellant forces are set up and the molecules move apart from one another.

Assuming the molecules of a gas are separated from one another, the proximities varying with the pressure, it is apparent that the greater the pressure the more molecules in a given or specific volume. Thus, the greater the pressure, the denser the gas or vapor. As it is the individual molecule which acts as a carrier of the heat energy it follows that a dense gas will be one having a greater heat quantity than if it were lighter or less dense.

This matter of heat quantity is of major importance when consideration of compressor displacement is involved. A dense gas makes the compressor displacement more effective. Hence, the admonition to "hold the back pressure to as high a point as possible."

Setting Expansion Valves

In setting automatic constant pressure expansion valves the back pressure selected should be such that just as the thermostat cuts out, the entire evaporator should be frosted. This assures operation of coil and compressor at highest point of efficiency. If only a portion of the coil is frosted or if suction line (and sometimes even compressor crankcase) be frosted the valve will have to be readjusted.

With high side float, low side float, and thermostatic expansion valves the pressure in the low side is reduced as heat in the refrigerated space becomes less available. By continuation of machine operation lower temperatures can be secured.

Determining Back Pressure And Temperature

To determine the temperature at which vaporization of the refrigerant is occurring the worker must attach a compound gauge or better still a gauge test set. The pressure reading of the low side is then referred to the refrigerant chart.

Most machines have small labels or tags which specify the refrigerant in the system. Referring to the refrigerant chart and running down the proper column until the back pressure reading, or the figure nearest it, has been found, follow along the horizontal until the left hand or Temperature reading is secured.

Thus, if a methyl chloride system was involved, select this column and if the gauge reading taken was 6 lbs., follow down this column until the 6.2 lbs. box is reached, as this is nearest the reading. The temperature corresponding to this pressure reading, as found under the left hand column headed "Temp. °F.," will be found to be +5° F.

Where specific settings for different applications are given for one refrigerant the corresponding settings can be determined by the use of the chart.

Determining Head Pressure

All systems are dependent upon maintaining a liquid seal at the throttle device or in the receiver, the former in the case of the high side float and the latter (in condenser or receiver) in all other systems.

To determine if the charge is correct, allow the system to operate for a period of fifteen or more minutes and then secure a back pressure reading.

Determine the vaporizing temperature, as previously outlined. Then, using this evaporating temperature figure, refer to the table of Condenser Factors. For example, assume the refrigerant is sulphur dioxide and the back pressure found to be 8 in. The nearest figure to this in the sulphur dioxide column of the Refrigerant Chart is 8.8 in. and the temperature corresponding to it is 0° F.

Using this figure (0° F.) and assuming the condensing unit is operating in a 75° F. room, the Chart of Condenser Factors gives a factor of 25 for these conditions, (0° F. and 75° air over condenser). This factor (25) is added to the original temperature of the air over the condenser, thus: 25+75=100.

Using this figure refer once more to the Refrigerant Chart and find the pressure corresponding to it under the Sulphur Dioxide column, which is given as 69.8 lbs. gauge. Thus, if the high or head pressure gauge reads 70 or 71 lbs. the charge is correct. If more than one pound in excess of this indicated reading the following should be checked:

(a) excessive charge
(b) dirty condenser
(c) air in condenser
(d) excess of oil
(e) fan blades bent
(f) wrong fan design for motor speed, or size is incorrect.
(g) motor reversed, making fan ineffective
(h) air duct from or to the machine compartment blocked
(i) unit tight against wall, cutting off air circulation over condenser
(j) discharge service shut-off valve closed or almost front seated
(k) condenser tube pinched as a result of a blow, or clogged with improper oil.

As a general rule the cause will be found to be due to air in the system or to excessive charge.

Check the preceding causes carefully and eliminate each until the true cause is discovered.

Low Head Pressures

Where the head pressure is below the given pressure the system is undercharged and sufficient refrigerant must be gotten into the system to bring the head pressure to the indicated one.

Correctness of Chart

The chart method, originated by the author, has been checked for several years on all types of air-cooled compression apparatus and has proved successful for all refrigerants used in air-cooled systems.

Where a factor and temperature figure are added and found to give a number between the chart figures, a little mental arithmetic should be indulged in, so that the correct head pressure can be determined.

Condenser Factors

Refrig. Temp. °F in Evap.	Temperature of Air Over Condenser °F. 60	65	70	75	80	85	90	95	100
—40	14	13	12	11	10	9	8	7	6
—35	15	14	13	12	11	10	9	8	7
—30	16	15	14	13	12	11	10	9	8
—25	18	16	15	14	14	13	13	12	11
—20	20	18	17	16	15	14	14	13	12
—15	21	20	20	19	19	18	15	14	13
—10	23	23	22	22	21	20	17	15	14
— 5	26	25	25	24	23	22	18	17	15
— 0	28	27	26	25	24	23	22	20	18
+ 5	30	29	28	27	26	26	25	24	23
+10	35	34	32	31	30	28	26	25	24
15	38	36	34	32	31	30	27	26	25
20	40	38	36	33	32	31	29	28	27
25	45	42	39	37	35	33	32	30	29
30	48	47	45	42	40	38	36	35	34
35	50	49	48	46	45	44	43	42	41
40	52	51	50	48	46	45	44	43	42

Alco Valve Enlarges New York Branch

NEW YORK CITY—To accommodate a growing business in the New England district, Alco Valve Co. has moved its New York branch office and warehouse to larger quarters at 381 Fourth Ave. here. A. B. Schellenberg, district manager, is in charge.

Russell Electric Names Three Distributors

CHICAGO — Russell Electric Co., manufacturer of air conditioners and controls, has appointed three new distributors — Melchior, Armstrong, Dessau Co., New York City; Kelley-How-Thompson Co., Duluth, Minn.; and Montgomery Bros., San Francisco.

Melchior, Armstrong, Dessau will utilize its branch offices in Boston, Philadelphia, Baltimore, Brooklyn, and Rochester to cover the eastern and southeastern territories.

Northwest territory will be handled by Kelley-How-Thompson. The San Francisco concern, Montgomery Bros., with service warehouses in Los Angeles, Portland, and Seattle, will act as sales representatives for Russell in the seven West Coast states.

Perry Opens Jobber Branch In Lynbrook, N. Y.

LYNBROOK, N. Y.—Perry Metal Products Co., Inc., recently opened a branch here which will carry its complete line of refrigeration and oil burner parts and supplies.

Samuel E. Demerast, formerly with Kelvinator Corp., and more recently with Crosley Radio Corp., is in charge.

Refrigeration *and* Air Conditioning Supplies

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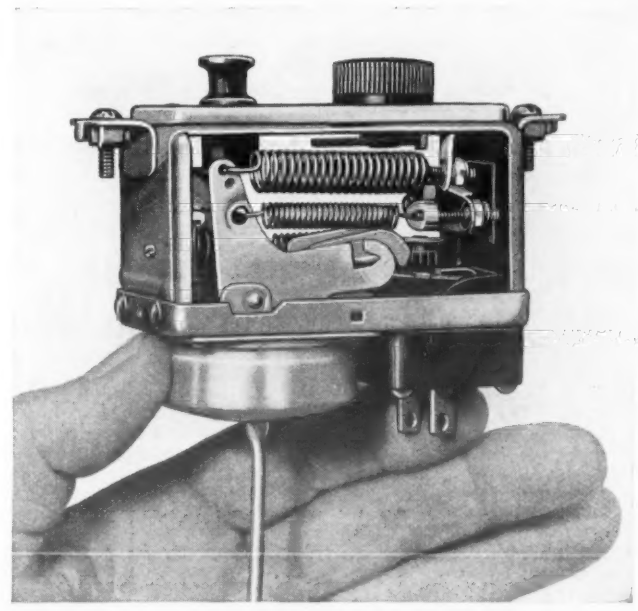
1104 Bedford Ave., Brooklyn, N. Y.



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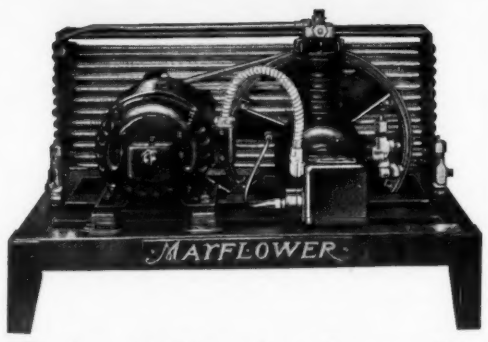

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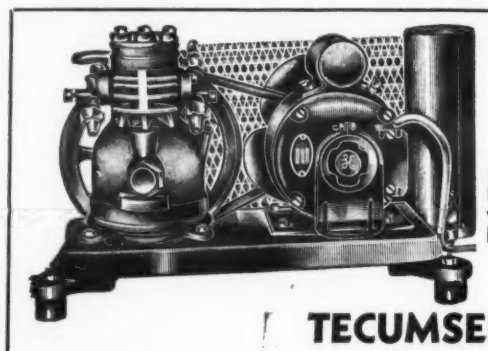

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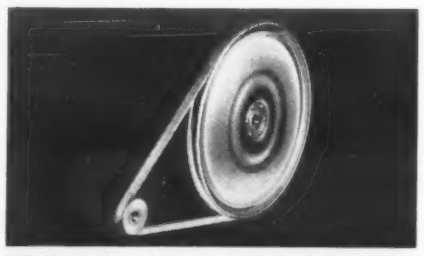

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Publisher:

The answers to all your questions would require an extremely lengthy reply, but I will endeavor to answer some of them.

I believe the reason for very few good refrigerator repair men is due to the fact that the majority of men in this field at present, seldom if ever handled a tool prior to their entrance into this field. Of course the depression is largely responsible for this and time alone will correct it.

I have been actively engaged in the mechanical field for 25 years, specializing in electrical repairs, such as signal system, telephone system, remote control, motors, etc. I was in charge of an electrical repair shop employing about eight men, doing nothing but repairs. The work was mostly trouble shooting.

Years ago my thoughts were attracted to refrigeration as a new field with great possibilities. Occasionally I made repairs on electrical apparatus in ammonia and fur storage plants. This helped me to learn some of the fundamentals of refrigeration.

When the depression hit home, I decided to get into this field. I had a fair idea of the principles, but thought it best to study more about it. I attended a school and went into business.

I have been in business about four years, specializing solely in domestic refrigerator repairs and service. I have four men in my employ at present. We do all our own motor rewinding and repairs, and machine many unobtainable parts.

Our practice is to do the best job, give service, complete satisfaction in every respect, and most of all be reliable. All our work is through recommendation. The majority of our work is for very large operators and real estate firms. We also do considerable shop work for service men.

Our shop consists of a lathe, grind stone, adjustable testing platforms of our own design for compressors and motors, a series of test benches where we set complete units into, a test tank, and also float testing apparatus, and an on-and-off recorder.

We also have quite a stock of tools for the shop, such as open end and box wrenches, drills of all sizes, expansion and alignment expansion reamers, lathe grinders, and a series of benches and vises, also many special tools for the lathe which we made for special jobs.

We stock everything for rebuilding motors from bearings and bronze bars to wire and spaghetti.

At this time we are preparing to move to larger quarters and expect to add an arbor press, drill press, another lathe, and most of all, to install reversible exhaust fans in both front and rear, and many other improvements.

We buy most of our supplies from the Aetna Supply Co., who carry a complete line.

This all may look very well on paper but I assure you I have had many sleepless nights and worked all hours, and occasionally do, to gain and retain the confidence and respect of my following.

I note with interest your editor George Taubeneck's trip around the world to secure valuable information. I wonder will this globe trotter interview any of the so-called small fry, by that I mean repair men.

Most of the leading manufacturers advertise in your paper which is proof that it is the mouthpiece of the refrigerating industry. Time and again I notice articles referring to the betterment of the industry. I also note the manufacturers mention great improvements have been made in the latest models. I am a firm believer in the necessity for research by large manufacturers.

Still, if these same manufacturers would spend a small fraction of what they allot for experimenting to having one of their men take a trip around the country interviewing some of the men who specialize in service and maintenance, I am certain many important improvements in the mechanical construction of their units could be made at very little cost.

Articles have been published in regard to cost price and profits; and in most instances by the leading manufacturers' representatives. I also note that these same companies do not practice what they preach in regard to repair service.

The repair field in general is made up of a series of small concerns, in fact mostly one man shops, most of them striving for existence, but there are some very reliable and capable ones to be found.

A spirit of cooperation would greatly benefit the refrigeration industry as a whole and would undoubtedly lead to greater profits for all concerned.

FRANK LOWITZ.

EXPLANATORY NOTE—Since the announcement of a "Catalog Mailing Service" which the NEWS is planning to provide for the benefit of our subscribers, a large number of independent service companies have asked to be registered for this service. In the letters have been many comments regarding the helpful information in the columns of ELECTRIC REFRIGERATION NEWS with suggestions about the kind of additional information which would be valuable to service men.

Letters have been written to a number of these subscribers asking certain specific questions such as:

How did you happen to get into the service business?

Where did you receive your first training in service work?

What kind of jobs are you called upon to handle?

How do you get new business and how do you estimate your charges?

What kind of tools and equipment do you have in your shop?

Where do you buy your supplies and materials?

In response to these questions some very interesting letters have been received which will be published in coming issues of the NEWS.

It is hoped that the publication of these letters will encourage other service men to tell in detail about their problems and progress. The exchange of experiences should be helpful to all those engaged in refrigeration service work.—Publisher.

Survey of Users Boosts Service Business of Appliance Shop

KANSAS CITY—An average of $600 a month in electric refrigeration service work, and from 17 to 25 calls a day in both the sales and service departments are the results of an electric refrigeration survey made by the Electrical Appliance Shop, 4740 Prospect St. here during the months of June, July, and August.

C. B. Smith, proprietor of the shop, trained five university students, on vacation, to check-up and estimate repair work on electric refrigerators.

Territories were assigned and each man was to obtain a complete check-up on the refrigerators in his territory. They didn't sell, but if on this first trip they contacted housewives wanting immediate service, the shop was notified.

"Saying that they were not selling anything, but merely making a survey, made it easier for them to get into the homes," Mr. Smith says.

Information concerning the present box, number of years it had been used, and likely service needed in the future, was jotted down and placed in the prospect file.

Salesmen were assigned the cards and were required to make notations on each card every 10 days. If they failed to do so, the cards were placed in an "open" file and redistributed.

Believing that it was necessary to keep a frequent check on his survey crew, Mr. Smith met the members every noon and again in the evening. During especially hot weather, he paid them double for all bona fide prospects received during a specified time.

Paying the students a certain amount of money each day with additional percentage for prospects for new boxes and service jobs they secured, Mr. Smith found obtained the best results.

Another Episode in the Service Experiences of Grover Townsend

(*Publisher's Note*: On page 23 of last week's issue of the NEWS was published the first part of a letter from Grover A. Townsend, refrigeration technician of Salamanca, N. Y., telling about how he happened to get into refrigeration service work, and how he solved one knotty problem in his service experience. This week we publish the latter half of his letter, in which he tells another interesting and instructive story.)

My next story is entitled:

When in Doubt Say Nothing Or When Ignorance Isn't Bliss

The phone rang one noon as I was eating. It was a phone call from a plumber friend telling me to grab my tools and beat it over to the City Hospital and stop a bad sulphur leak. I tossed my tools into the back of my car and stepped on it. A few minutes later I drew up in the court yard at the rear of the hospital where the radio service man and a clerk from the hardware store which handles the Frigidaire stood gasping for breath. They couldn't take it.

After taking a deep breath I descended into the hall where the refrigerator stood along the wall between the kitchen and the dining room doors. I quickly located the leak in the suction line near the compressor. I came up for air and a couple of wrenches. I returned, and opening the refrigerator, shut off the suction line at the float header. The leak stopped.

Let us go back to the beginning. The refrigerator was a six-door reach-in cooler. The Frigidaire air-cooled ice cream unit stood along the wall at the left end. Someone had moved it, cracking the suction line at the bend near the compressor. This let air in and started up the unit. The compressor ran until the motor stalled. The pressure in the evaporator began to rise and leak out of the crack. The janitor called the dealer.

As the dealer's son, who takes care of their service work, was out of town, he sent a clerk and the radio man, who thought he knew a lot about refrigerators. They couldn't get within 20 ft. of it so they called back the store for the plumber. On his arrival he asked for the largest electric fan the janitor could find and opened the windows. It began to clear so that one could get near the machine. He shut off all the valves on the unit and opened the refrigerator where he was going to take off the caps on the header to see if there were valves there. Now if the radio man had only left him alone, he would have come out all right. But the radio man spoke up and said that he was positive that those caps covered openings so that the lines could be connected from the other direction. As my friend didn't know for certain, he played safe and called me before returning to the store.

In the next couple of hours the smart young man learned a few things about refrigeration. I attached my gauge set. I cracked the high-side service valve on the compressor. The gauge hand shot around so quickly I barely had time to reseat the valve before it reached the stop. The gauge read 250. I wasn't going to risk blowing up my gauge so I ran a purge line into the laundry room. I stuck the end of the hose down the drain and turned on the water. I purged steady for five minutes. The gauge then read 150. I then kept on purging until the pressure was down to 60.

Next I cut off about 3 in. of the damaged suction line and reflared it. I purged the line and tested for leaks. I charged 2 lbs. of refrigerant, all I had at the time, into the machine. I opened all valves to the correct position and again tested for leaks. I left the machine running and went on to another job. Checking back that evening I found things ok. I suggested to the head nurse that the door gaskets be renewed. She told me to go ahead and order some.

Next week I returned and replaced the door gaskets. I also charged three more pounds of refrigerant into the unit and a pint of oil to make up for that which was lost. I gave the condenser a thorough cleaning with a mixture of gasoline and carbon tetrachloride. It was a long and dirty job to remove the film of oil and dust. My total time for the complete job was 11 hours. I received $17.40 to cover labor and material.

I had better stop telling stories or I will be unable to put all the sheets in the envelope. Until the next time then. GROVER A. TOWNSEND.

P.S. A picture of me in anything except a raccoon coat is out until the sun comes back to pay us another visit.

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A Service School Endorsed By Its Graduates.

Refrigeration, Oil Burners, and Air Conditioning

Training on all Makes. *Supervisors—Dealers—Service Managers*—visit New York for a few weeks study of metropolitan practice and routine.

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HEATING, REFRIGERATING AND AIR CONDITIONING CONTROLS

DETROIT LUBRICATOR COMPANY

DETROIT, MICHIGAN, U.S.A.

Canadian Representative—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg

Questions

Chief Engineers

No. 2698 (Manufacturing Representative, New York)—"I am anxious to get the names of the chief engineers of the engineering officers in charge of the domestic refrigeration divisions of the companies which we have listed.

"I appreciate that among this list are a number of companies who manufacture commercial equipment also, but I am particularly interested in the men in charge of engineering of the domestic refrigeration division only."

Answer: Replying to your inquiry we have supplied the names of the chief engineers in charge of the domestic refrigeration division of the companies you requested.

F. E. Johnston, Chief Engineer
Crosley Radio Corp.
Arlington St., Cincinnati.

E. B. Newill, Chief Engineer
Frigidaire Corp., Dayton.

A. R. Stevenson
General Electric Co., Schenectady.

Earl Heitman, Chief Engineer
Kelvinator Corp.
14250 Plymouth Rd., Detroit.

J. H. Ashbaugh, Mgr., Refrig. Eng. Dept.
Refrigeration Division
Westinghouse Electric & Mfg. Co.
Mansfield, Ohio.

J. H. Reindel, Chief Engineer
Norge Corp.
670 E. Woodbridge St., Detroit.

T. Scofield, Chief Engineer
Sparks-Withington Co.
Jackson, Mich.

Charles D'Olive, Asst. to President
Stewart-Warner Corp.
1826 Diversey Pkwy., Chicago

William Higham, Chief Engineer
Universal Cooler Corp.
7424 Melville Ave., Detroit.

C. E. Cox, Prod. Mgr.
Williams Oil-O-Matic Htg. Corp.
1201 E. Bell St., Bloomington.

For your information, we suggest that in future situations of this type you consult the geographical section of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY which lists the personnel of all manufacturers.

Gas & Kerosene Units

No. 2699 (Dealer, Texas)—"We were wondering if anyone else makes a gas refrigeration and kerosene machine, except the Electrolux people. The Electrolux is the only one we have ever heard of. If you know of any one else, we will appreciate you advising us."

Answer: Absorption refrigerators are manufactured by the following companies in addition to Electrolux: the Crosley Radio Corp., Arlington St., Cincinnati, Ohio; the Gibson Electric Refrigerator Corp., Greenville, Mich.; the Perfection Stove Co., 7609 Platt Ave., Cleveland, Ohio; and the Allyne Refrigerator Corp., c/o Cleveland Tractor Corp., East 193rd St., Cleveland, Ohio.

There is also on the market a gasoline motor-driven refrigerator which is manufactured by the Waukesha Motor Co. of Waukesha, Wis.

Cutler-Hammer Address

No. 2700 (Dealer, Pennsylvania)—"We are subscribers of the NEWS and are desirous of obtaining the address of the Cutler-Hammer people. One of our customers has a Grunow refrigerator and the cold control has gone bad. We would like to send the control direct to the Cutler-Hammer people and have them repair it for us."

Answer: Cutler-Hammer, Inc., 315 North 12th St., Milwaukee, Wis.

Conditioner for Auto

No. 2701 (Manufacturing Agent, Iowa)—"Could you give me the name and address of the concern that has perfected and is manufacturing an air-conditioning unit to be installed in the conventional pleasure automobile?

"Will you please give me the address of the American Society of Refrigeration Engineers?

"Will you please send me a description and price of the MASTER SERVICE MANUAL. Kindly tell me what national makes of refrigerators it deals with as well as the orphan types or makes. Is the SERVICE MANUAL ready for shipment?

"Do you still have available for shipment the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY and MARKET DATA BOOK?"

Answer: Carrier Engineering Corp., 850 Frelinghuysen Ave., Newark, N. J., recently introduced an air-conditioning system for passenger motor cars. This apparatus was described in the Nov. 6, 1935, issue of ELECTRIC REFRIGERATION NEWS. Back copies of the NEWS are available at a cost of ten cents each and are handled on a paid-in-advance basis.

Address of the American Society of Refrigerating Engineers is 37 W. 39th St., New York, N. Y.

The MASTER SERVICE MANUAL (440 pages) sells for $3 per copy. The volume contains installation, operation, and service information on all the fundamental types of household refrigeration equipment. It also includes service data on a dozen or more "orphan" makes of refrigeration machines.

We have available at the present time copies of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY and MARKET DATA BOOK about which you inquire. These volumes sell for $3 per copy or $5 for the set of two. You will be interested to know that we offer various combination rates for paid-in-advance orders. For instance, the MASTER SERVICE MANUAL, DIRECTORY, and MARKET DATA BOOK (which sell separately for $3 each) may be obtained at a total cost of $6.50 for all three books.

C. R. M. A. Members

No. 2702 (Manufacturer, Illinois)—"With reference to the article in your Feb. 12 issue of ELECTRIC REFRIGERATION NEWS, page 1, column 1, covering commercial refrigeration manufacturers, do you know where we could get a list covering these members of the C. R. M. A.?"

Answer: You might obtain a list of the members of the Commercial Refrigerator Manufacturers Association by addressing the secretary of the association, Paul Sullivan, 111 West Washington St., Chicago.

Milk Coolers

No. 2703 (Dealer, Tennessee)—"Please have manufacturers send information on milk-cooling equipment. I am canvassing my county for Kelvinator refrigerators and Monarch ranges.

"T. V. A. is putting in rural electrification and this is a dairy county and should be a good market for milk coolers."

Answer: A complete list of milk-cooling equipment manufacturers will be found on pages 199 and 200 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Truck Systems

No. 2704 (Dealer, Wisconsin)—"Will you please advise us the name and address of the 'Kold-Hold' refrigerating system for refrigerating trucks.

"Also the name and addresses of any other manufacturers of refrigerating equipment for ice cream delivery trucks."

Answer: The "Kold-Hold" system for refrigerating trucks is manufactured by the Kold-Hold Mfg. Co., Olds Tower Bldg., Lansing, Mich. Other manufacturers of refrigerating systems for trucks are listed on page 208 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

St. Louis Installations

No. 2705 (Manufacturer, Ohio)—"From time to time we have noticed in your publication a list of air-conditioning installations by cities.

"If you have this information available on the city of St. Louis we would appreciate very much having a copy."

Answer: Published in the March 13, 1935, issue of ELECTRIC REFRIGERATION NEWS is a complete report of the air-conditioning installations made in the city of St. Louis for the years 1933 and 1934, together with the total number of installations made prior to 1933.

The Dec. 25, 1935, issue contains a summary of the installations made in St. Louis for the first 10 months of 1935.

Kitchen Bureau

No. 2706 (Dealer, Illinois)—"Can you advise where the headquarters are located of the Kitchen Modernization Bureau, referred to at some length in a recent issue of your valued paper?

"We would like to receive full information concerning the plan and program, as it looks as if it might be a promotion that could be tied into advantageously."

Answer: National Kitchen Modernizing Bureau, 420 Lexington Ave., New York City.

Ice Cream Cabinet Units

No. 2707 (Manufacturer, Iowa)—"We are putting an ice cream cabinet on the market and would like to have you send us a list of manufacturers who make compressors suitable for this purpose."

Answer: Manufacturers of commercial condensing units are listed on pages 185 through 192 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Service Manual

No. 2708 (Dealer, Pennsylvania)—"Please advise if your company, or if you know of any company, that has service manuals on the various models and makes of refrigerators similar to the radio service manuals published by Rider, giving service data, charts, etc. on radio."

Answer: See below.

No. 2709 (Electrical Contractor, Massachusetts)—"Would appreciate any information that you might have in reference to a good service manual for the repairing and servicing of modern electric refrigerators.

"Being an electrical contractor I have had to refuse to repair refrigerators for my customers because of lack of knowledge along this line.

"I would also appreciate a sample copy of REFRIGERATION NEWS with the intent of subscribing to it."

Answer: On page 24 of the Feb. 26 issue of ELECTRIC REFRIGERATION NEWS you will find a review of the MASTER SERVICE MANUAL, which will tell you the information that is to be found in the 440-page manual which is just off the press.

The weekly issues of ELECTRIC REFRIGERATION NEWS also include much pertinent information on how to meet various service problems, and they keep the reader up to date with the new developments in the construction and repair of modern electric refrigeration units.

Classified

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

WANTED: By large refrigerator hardware manufacturer young sales engineer for hardware designing and engineering. State education, experience in first letter. Excellent opportunity. Box 770, Electric Refrigeration News.

AIR CONDITIONING ENGINEER. For the right type of man who has a thorough practical experience specifying and installing air conditioning equipment for nationally known manufacturers, a most interesting and remunerative position. Must be willing to work in New York City. Give all experience and references in first letter. Box 772, Electric Refrigeration News.

WANTED: Refrigeration Engineer experienced in the use of various refrigerants and designs of compressors for domestic refrigeration. Technical training not necessary but preferable. In answering this ad state schooling, experience, and companies served. Address T. J. Scofield, The Sparks-Withington Co., Jackson, Mich.

SALES ENGINEER WANTED. Prominent manufacturer of automatic control equipment has several openings for sales engineers. Previous University training or experience in air conditioning and heating, and an acquaintanceship with architects and engineers is essential. Box 774, Electric Refrigeration News.

WANTED, by large manufacturer in Middlewest, a technically trained man thoroughly familiar with the design, application and installation of heating, ventilating, cooling, dehumidifying, and control equipment. Prefer one having had experience in writing air conditioning course or manual. Interviews will be arranged on basis of your first letter. Our employees know of this advertisement. Box 776, Electric Refrigeration News.

REPRESENTATIVE WANTED. Soundly financed manufacturer of mechanical warm air furnaces, furnace conversion units, split system equipment, humidification units, comfort cooling coils, unit heaters, etc., will appoint factory representatives in the larger distributing centers to contact distributors and dealers. Competent experienced men interested in a permanent sales connection with the opportunity for unusual earnings, write Box 777, Electric Refrigeration News.

EQUIPMENT FOR SALE

BRAND NEW PARTS. Manufacturers' close outs—limited quantities. American Radiator expansion valves $1.95, thermostatic expansion valves $3.95, Mullins evaporator complete with 3 trays, etc., $5.95, automatic door light complete, 59¢. Write for quotations on any nationally advertised parts. Lowest prices guaranteed. Federal Refrigerator Corp., 57 East 25th St., New York.

ISOBUTANE. We offer purest and dryest Isobutane for the most exacting scientific purposes; in your 80 lb. cylinders at $.75, in our 120 lb. cylinders, $.70, in small lots at $1.00 per pound. The Standard Refrigeration Co. of Pittsburgh, 1148 Dohrman St., McKees Rocks, Pa.

COMPRESSORS for 4 and 5 foot cabinets. $7.00 each. Box 769.

NEW, single and twin cylinder methyl compressors, especially adaptable, domestic and small commercial installations; condensers, receiver valves, pulleys, fans; motors, ⅛ to ½ H.P.; fittings, expansion valves, Bristol recording instruments, etc. All new merchandise in original containers. Will make prices attractive for quick disposal. Box 775, Electric Refrigeration News.

EQUIPMENT WANTED

WE ARE on the market for any quantity of used or close out commercial refrigeration equipment, condensing units, coils, air conditioning apparatus, etc. Advise by mail what you have to sell, make, model, condition, price, etc. Address Box No. 135, Madison Square Sta., New York, N. Y.

FRANCHISE AVAILABLE

WANTED: Dealers and Distributors of our line of refrigerator display cases, cooling rooms and refrigerators. Interested in securing those engaged in selling commercial refrigeration. H. Ehrlich & Sons Mfg. Co., St. Joseph, Mo.

HERMETIC UNITS REPAIRED

GENERAL ELECTRIC SEALED UNITS—repaired, rebuilt, exchanged. Guaranteed service. Our modern shop is especially equipped to efficiently repair these units. prices low and workmanship the best. Give model number when writing. Immediate service. Rex Refrigeration Service, Inc., 446 East 79th St., Chicago.

HERMETIC UNITS rebuilt or exchanged: Majestic all models $17.50, Servel $22.50, G.E. $25.00 and $32.50, other standard makes $19.50. Majestic Hermetic Dome assembly $12.50, Majestic standard compressors $6.50, thermostat or cold control exchange $2.50. Other prices on request. Six months' guarantee. Wholesale only. Refrigeration Products, Inc., 122 W. Illinois St., Chicago, Ill.

REPAIRS

THERMOSTATS REBUILT. Replacement parts bought and sold. Send me (transportation prepaid) five defective or obsolete thermostats. Will repair and return one free of charge for remaining four or repair charges: Ranco, Tag, Cutler-Hammer, (household) $2.25; B & B $3.00. Flushing 9-2206. S. F. Harriss, 137-66 Holly Ave., Flushing, N. Y.

Service Men Know They Can DEPEND ON EXTRA DRY ESOTOO VIRGINIA SMELTING

(Liquid Sulphur Dioxide)

Recognized, the world over, as a highly reliable refrigerant—as free from moisture, as pure, as human skill and rigid technical control can make it.

Refrigerator Manufacturers and Service Men who standardize on EXTRA DRY ESOTOO and its companion-product, V-METH-L (Virginia Methyl Chloride), enhance prestige and increase profits.

Speedy delivery from 66 distribution-points in North America. For details, mail coupon.

VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

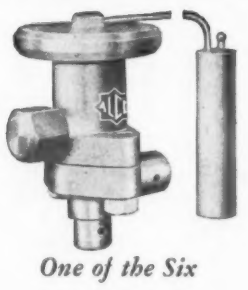
Mail Coupon Now!

F. A. Eustis, Sec'y, Virginia Smelting Co., 131 State St., Boston, Mass.
Send me the literature I have checked. I am interested in receiving any additional literature on Electrical Refrigeration you may issue from time to time.
☐ Folder: Extra Dry ESOTOO (Liquid Sulphur Dioxide) E-27-36
☐ Folder: V-METH-L (Virginia Methyl Chloride)
☐ Folder: Transferring from large to small cylinders
☐ Circular: Physical properties of various refrigerants
(Write name and address in margin)

Series "T" THERMO VALVES

For Liquid Refrigerant Control

6 TYPES OF VALVES
13 CONSTRUCTION SIZES



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● Covering all capacity requirements from fractional tonnage to 29 tons Methyl Chloride or 16 tons Freon per hour.

● The simplest valves ever produced—only three pieces. The only installation tools required are an open end wrench and a screw driver.

● The sturdiest valves ever produced. 800 pounds pressure will not rupture the power element. After 3,000,000 flexings no signs of deterioration can be detected. Alco Series "T" Thermo Valves are as sturdy as the strongest part of the refrigerating system.

● Responsive to the slightest change in superheat, yet adjustable to control at any required superheat up to 24° F.

● Built for the performance you have a right to expect—and guaranteed to do it.

For further details ask for Bulletin 144D

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Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

KOCH
Believes In
CORKBOARD
The Insulation of every Koch fixture is installed thickly and thoroughly. Display cases, for example, have 4-in. thick corkboard insulation. The result is lower operating costs and diminished machine capacity required for refrigeration.
DISTRIBUTORS WANTED
Write for catalog and sales proposition. Submit references. Some attractive territories still open.
KOCH
North Kansas City, Mo.
KOCH
ESTABLISHED 1883
KOCH
NORTH KANSAS CITY MO.

3600 Line of Display Cases—

These cases afford more square feet of display space than many other cases considerably larger. Two sizes are available—14 and 19¼ square feet of display—and you have your choice of Porcelain or DuLux finish.

Among the features are extra large rubber composition sliding doors; extra height doors for storage department; full view of illuminated display section; removable intermediate shelf, and 3" approved insulation.

Write for complete catalog information.

For real convenience, economy, room and accessibility these cases cannot be equaled. Sold only through Dealers and Jobbers.

GLOEKLER MANUFACTURING COMPANY
429 Fourth Avenue, • • Pittsburgh, Pa.

TYLER'S NEW WELDED STEEL REFRIGERATOR CASES

At last a general purpose case at a sensible price. Offers every advantage of the most costly cases at tremendous savings. Modern in every detail. Comes equipped with coils. Single and double duty models.

AN AMAZING VALUE

Hundreds in use. Perfect refrigeration for meat, dairy and delicatessen products and all perishables sold in food stores. Write or wire for all the facts.

TYLER Sales-Fixture CO. Dept. E, Niles, Mich.

3 INCH INSULATION - TRIPLE GLASS

THE ONLY PISTON RING DESIGNED & DEVELOPED Exclusively for Refrigeration

SILVER SEAL PISTON RINGS

The Ring with a bearing face. A Bearing for the ring against the cylinder wall.

Longer Life
Less Friction
Better Seal
No Scuffing
Burnishing Cylinder

DEALERS — JOBBERS — SERVICE MEN
Write for Details
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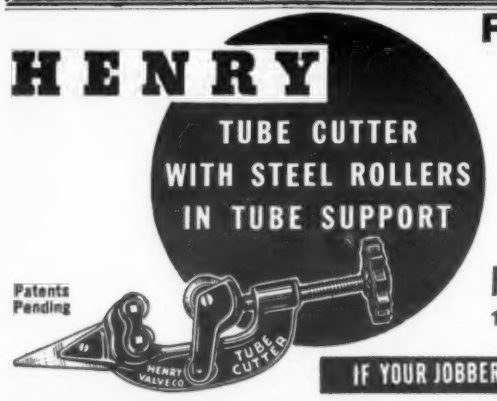

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No. 10 for 3/16" to ¾" o.d. inc.... $2.20
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We Carry a Most Complete Line of
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FOR THE CONVENIENCE OF THE REFRIGERATION TRADE

Send Today for HARRY ALTER'S NEW 1936 Catalog
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We are large, dependable refrigeration supply distributors carrying a large stock of nationally known parts and supplies. All shown in a new complete net price catalog—gladly sent on request to refrigeration dealers and service companies. Write today on your letter-head.

FOR ALL MAKES
AIR CONDITIONING AND COMMERCIAL

The HARRY ALTER CO. Inc.
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Cooke Disclaims REA Plan to Eliminate Appliance Dealer

WASHINGTON, D. C.—Morris L. Cooke, Rural Electrification administrator, recently denied charges that an attempt will be made by the REA to eliminate the retail appliance dealer through extension of cooperative buying.

Mr. Cooke said that the administration will stop any attempt on the part of rural power cooperatives to force their members to buy electrical appliances direct from the manufacturers.

Although there were a few such cases at the start of REA, Mr. Cooke said that they were disposed of immediately.

One of the methods by which REA seeks to forward the expansion of rural electrification is by making long-term loans to cooperative groups for the installation and operation of electric power lines.

A ruling by Comptroller General McCarl prohibits the use of REA funds to finance the purchase of electrical appliances, making Electric Home & Farm Authority responsible for financing credit purchases. The EH&FA buys accounts receivable from any accredited merchant.

In general, the REA has no control over cooperative buying at all, Mr. Cooke said.

G-E Appoints Bennett & Griffin District Radio Managers

BRIDGEPORT, Conn. — General Electric Co. has appointed H. W. Bennett and C. W. Griffin as district radio managers, with headquarters at Minneapolis and Los Angeles and R. A. Buescher and John Klenke as district radio representatives, with headquarters at Cincinnati and Portland, Ore. respectively.

Mr. Bennett, formerly a district specialist, joined G-E in 1930 as a member of the radio field sales organization. Prior to that time he conducted his own retail business. Mr. Griffin also joined the company in 1930, as district radio specialist on the Pacific Coast.

Mr. Buescher was previously engaged in radio retailing with Buescher's, his father's radio retailing organization in Cleveland. Two years on the Pacific Coast with RCA Photophone, eight years with General Electric in Schenectady in charge of motion picture work, and then the sales managership of the G-E Contracts Corp. prepared Mr. Klenke for his present position.

Powel Crosley, Jr., Points To Difficulties Facing Future of Television

CINCINNATI—Powel Crosley, Jr., president of Crosley Radio Corp., predicted a dubious future for television in a speech before 700 leaders of industrial, business, and transportation agencies at the meeting of the Cincinnati Traffic held in the Netherlands Hotel recently.

"How to entertain the public" will be the problem to overcome after technical difficulties have been solved, Mr. Crosley said.

Declaring that there is not enough of pictoral news events to interest the public, Mr. Crosley said that people would soon tire of watching a dance orchestra or radio stars broadcast.

The radio listeners, he said, will want to see drama, or pictures similar to those shown in motion picture theaters. To make such a picture requires several months and many thousands of dollars, he declared, and this would be out of the question for radio stations.

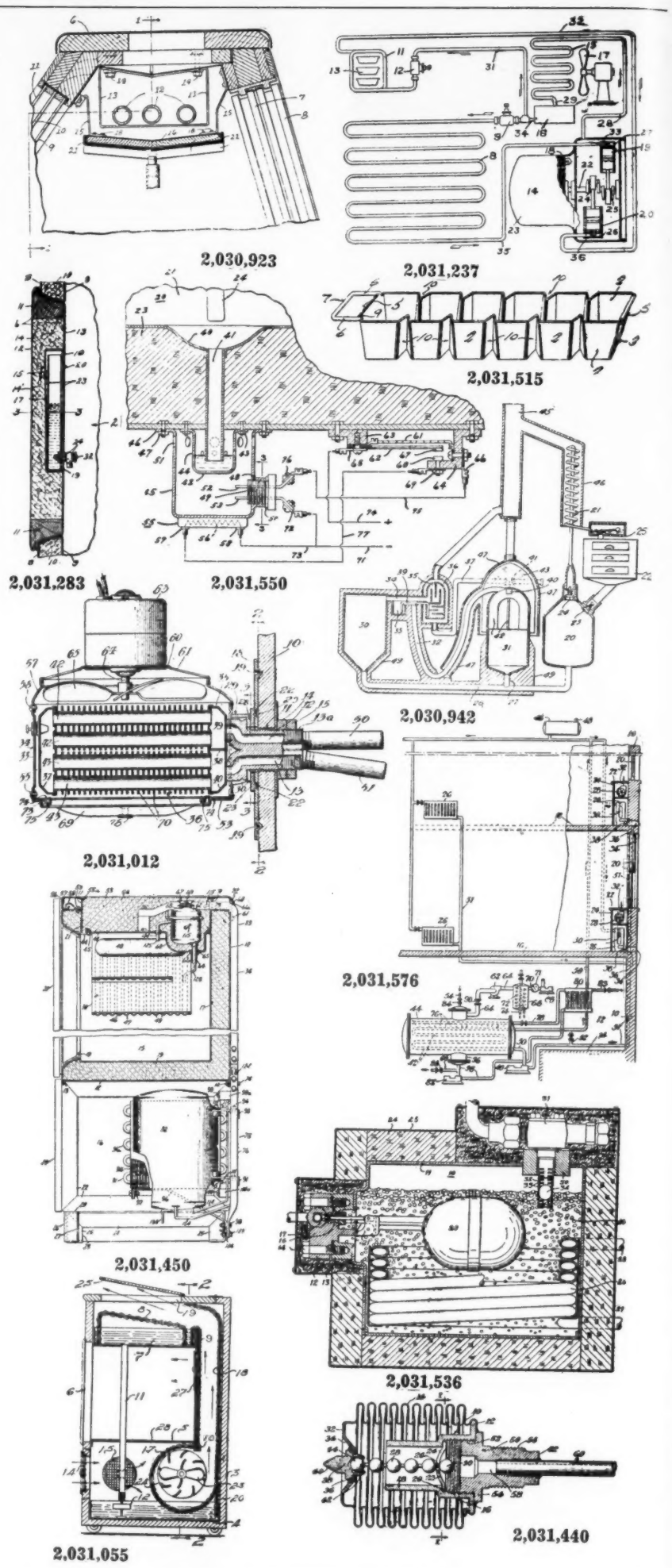
Garbage Gas May Be Used To Run Refrigerators

URBANA, Ill.—With the aid of a newly-developed garbage grinder on the drainpipe, the housewife may soon be able to drop the garbage down the kitchen drain and get back gas to run the refrigerator.

Basing his forecast on experiments at the University of Illinois, Prof. Harold E. Babbitt, instructor in sanitary engineering, claims that the gas could be generated at regular sewage disposal plants and distributed profitably by municipalities.

Rowe & Murray Get Posts With Lebeck Bros.

NASHVILLE, Tenn.—Mack Rowe, formerly of Hyde Rowe Co., was recently made manager, and Robert Murray, sales manager, of the appliance department of Lebeck Bros., Westinghouse dealer here.



Patents

Issued Feb. 18, 1935

2,030,923. DISPLAY REFRIGERATOR ACCESSORY. George J. Hopkins, Kendallville, Ind., assignor to McCray Refrigerator Co., Kendallville, Ind. Application Jan. 29, 1934, Serial No. 708,816. 1 Claim. (Cl. 62—89.6.)

2,030,942. REFRIGERATION APPARATUS. Truman S. Safford, Harrison, N. Y. Application May 20, 1932, Serial No. 612,460. 18 Claims. (Cl. 62—115.)

2,031,012. HEAT EXCHANGE APPARATUS. Philmore F. Sperry, Chicago, Ill., assignor to Excel Auto Radiator Co. Application June 10, 1935, Serial No. 25,960. 4 Claims. (Cl. 257—137.)

2,031,055. AIR CONDITIONING AND REFRIGERATING DEVICE. Robert McKinney, Highland Park, Mich., assignor of one-third to Lucius Harlow Grimes, Highland Park, Mich. Application Oct. 30, 1933, Serial No. 695,890. 4 Claims. (Cl. 261—107.)

2,031,237. REFRIGERATION APPARATUS. Matson C. Terry, Detroit, Mich., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Application Oct. 28, 1932, Serial No. 640,104. 4 Claims. (Cl. 62—116.)

2,031,283. REFRIGERATOR. Theodore Johnson Scofield, Jackson, Mich., assignor to The Sparks-Withington Co., Jackson, Mich. Application May 18, 1933, Serial No. 671,687. 3 Claims. (Cl. 62—89.)

2,031,440. BELLOWS THERMOSTAT WITH FLEXIBLE CONNECTING MEANS. Marshall H. Ward, Fairfield, Conn., assignor to Eridgeport Brass Co., Bridgeport, Conn. Application July 27, 1933, Serial No. 682,379. 10 Claims. (Cl. 297—8.)

2,031,450. REFRIGERATOR. Leonard W. Atchison, Schenectady, N. Y., assignor to General Electric Co. Application May 22, 1935, Serial No. 22,763. 17 Claims. (Cl. 62—116.)

2,031,515. ICE TRAY. Guy L. Tinkham, Detroit, Mich., assignor to McCord Radiator & Mfg. Co., Detroit, Mich. Original application March 10, 1934, Serial No. 714,908. Divided and this application July 5, 1934, Serial No. 733,726. 1 Claim. (Cl. 62—108.5.)

2,031,536. REFRIGERATING APPARATUS. Jesse G. King, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application Dec. 30, 1933, Serial No. 704,680. Renewed July 17, 1935. 11 Claims. (Cl. 62—126.)

2,031,550. REFRIGERATING APPARATUS. Jacob Smilack, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application Oct. 31, 1934, Serial No. 750,840. 9 Claims. (Cl. 62—103.)

2,031,576. HEATING AND COOLING UNIT FOR BUILDINGS. George W. Saathoff, South Orange, N. J., assignor to Doherty Research Co., New York, N. Y. Application Oct. 26, 1934, Serial No. 750,065. 2 Claims. (Cl. 257—8.)

PATENTS

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The Refrigeration Engineer's Manual

By S. L. Potts

Determining Amount of Discharge From Compressor Cylinder

Chapter 5 — Compressor Size (Concluded)

To figure the compressor volume. The volume in cubic inches displaced by the piston of the compressor in one stroke is found by

$$v=D^2\times.7854\times S$$

* * *

To find the volume in cu. ft. displaced per stroke

$$V=\frac{D^2\times.7854\times S}{1728}$$

* * *

To find the volume displaced in cu. ft. per minute.

$$V_c=\frac{D^2\times.7854\times S\times N}{1728}\qquad\text{Form 91C}$$

* * *

Volumetric efficiency. The volume displaced by the piston found from the above formula does not represent the volume discharged by the compressor.

The volume of gas under consideration increases as the pressure is lowered, and decreases as the pressure is raised. The volume also increases as the temperature is increased and decreases as the temperature is lowered.

To illustrate this, let us take the cylinder shown in Fig. 42 which has a perfect tight sealed piston B. When the piston is at the bottom of the stroke as at B the cylinder is full of gas at the suction pressure (say 15 lbs.). As soon as the piston moves up, the gases become compressed (volume decreases) until the pressure reaches the head pressure (say 150 lbs.) at G. Then discharge of the gas from cylinder will take place through D as the piston moves up from G to H. When the piston reaches the end of the stroke at H the clearance volume shown at F is filled with gas at the high pressure (150) which must be expanded to suction pressure (15) before any new gas can be drawn into the cylinder through valve C. Assume that the piston reaches position J on the downward stroke when the pressure inside the cylinder has reached suction pressure (15 lbs.) then the suction valve C will open and new gas is drawn into the cylinder while the piston moves down from J to B where the cycle repeats. This shows that the full volume of the piston displacement is not discharged at each stroke of the piston, and the relation between these two is known as the volumetric efficiency of the cylinder.

$$V_e=\frac{\text{volume discharges}}{\text{piston displacement}}=\frac{V_d}{V_c}$$

$$V_d=V_c\times V_e$$

The volumetric efficiency of compressors range from 50 to 85 per cent depending on the type of compressor, and the workmanship and the design. Horizontal compressors run up to about 80 per cent. Vertical single acting compressors up to about 85 per cent. The volumetric efficiency depends on the clearance volume in cylinder, and the compression ratio in the cylinder.

Compressor Cylinder

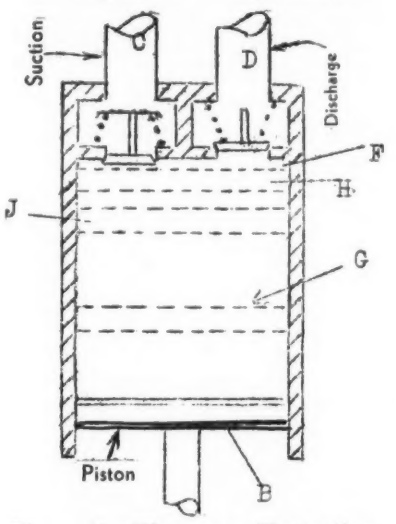

Fig. 42—Diagram illustrating volumetric efficiency of a compression cylinder.

* * *

To find the actual volume discharged by a compressor in cu. ft. per minute

$$V_d=\frac{D^2\times.7854\times S\times N\times V_e}{1728}\qquad\text{Form 92B}$$

D—the diameter of the compressor cylinder in inches.

D_s—Density of the gas at suction pressure, or the weight of one cubic foot of the gas in pounds.

$1/D_s$—Specific volume of gas, or the number of cubic feet of gas to one pound.

A—Area of cylinder in square inches.

C—Capacity of cylinder in tons of refrigeration.

N—Number of discharge strokes per minute. In single acting N=r.p.m., for double acting N=2 r.p.m.

W—Weight of refrigerant in pounds per minute.

V_c—Volume displaced by compressor piston in cu. ft.

v—Volume displaced by compressor piston in cu. in.

V_s—Volume in cu. ft. for one lb. of refrigerant at suction pressure and at suction temperature.

V_e—Volumetric efficiency in per cent.

V_d—Volume gas discharged by cylinder in cu. ft.

S—Stroke of piston in inches.

P_s—Piston speed in ft. per minute.

H—Heat contained in gas at suction pressure in B.t.u. per lb.

h—Heat contained in liquid at receiver pressure in B.t.u. per lb.

To find number pounds refrigerant discharged per minute by the compressor, it is necessary to refer to the refrigerant tables to find out how many cu. ft. of gas is in one lb. weight. This value changes for every change of pressure. The values for the gas at the suction side is taken because we can more accurately determine the conditions of the gas here than at the discharge side of the compressor. The gas at the suction side of compressor is usually assumed to be dry and saturated gas and is so represented by the values in the refrigerant tables. The suction gases may not be dry or saturated, they may be wet with frequent slugs of liquid refrigerant, or they may be superheated as they come from the evaporator. For accurate results, these conditions must be known. For our work here the gases will be assumed to be dry and saturated.

* * *

To find the weight of gas refrigerant discharged per minute.

$$W=V_d\times D_s$$

$$W=\frac{D^2\times.7854\times S\times N\times V_e\times D_s}{1728}$$

* * *

To find the refrigeration capacity of this weight of refrigerant, it is necessary to know the number of B.t.u. absorbed by each pound of refrigerant as it passes through the cycle. These values are taken from the tables of refrigerants. The liquid as it passes the expansion valve and enters the refrigerated space contains "h" B.t.u. per lb., and as it leaves that space, it contains "H" B.t.u. per lb. The difference between these two values is the number of B.t.u. the refrigerant has absorbed in passing through the evaporating part of the cycle.

* * *

B.t.u. absorbed per lb. of refrigerant.

B.t.u.=H—h.

* * *

Capacity in tons of refrigeration.

$$C=\frac{W\times(H-h)}{200}$$

$$C=\frac{D^2\times.7854\times S\times N\times V_e\times D_s\ (H-h)}{1728\times200}\qquad\text{Form 94C}$$

Heat absorbed at the rate of 200 B.t.u. per minute for 24 hours will produce one ton of refrigeration in 24 hours.

Solving the above formula for diameter of cylinder, we have

$$D=\sqrt[2]{\frac{C\times1728\times200}{.7854\times S\times N\times V_e\times D_s(H-h)}}$$

In this formula S×N is equal to the piston speed P_s. So if the piston speed is known, then the formula for the diameter of cylinder becomes

$$D=\sqrt[2]{\frac{C\times144\times200}{.7854\times P_s\times V_e\times D_s(H-h)}}$$

The value 1728 changes to 144 because the piston speed is expressed in feet per minute instead of inches.

* * *

Piston speed of compressor is the length of the stroke in inches times the number of strokes per minute divided by 12 to bring it to feet. Piston speed is always expressed in feet per minute.

$$P_s\frac{S\times N}{12}=\frac{S\times2\text{ r.p.m.}}{12}$$

$$\text{r.p.m.}=\frac{P_s\times12}{2\times S}$$

* * *

To find the capacity of a cylinder in tons of refrigeration.

$$C=\frac{D^2\times.7854\times P_s\times V_e\times D_s\ (H-h)}{144\times200}$$

The value of 1728 becomes 144 in denominator because the piston speed is given in feet instead of inches.

The refrigeration capacity may be worked out on the basis of cu. ft. of gas discharged per minute instead of the lbs. of gas per minute. The difference in work is only slight and might be preferred by some students. The volume displaced by the compressor piston is:

$$V_c=\frac{D^2\times.7854\times S\times N}{1728}$$

* * *

Heat absorbed by one lb. of gas is B.t.u.=H—h.

The cu. ft. of gas contained in each pound is found in tables is

$$\frac{1}{D_s}$$

Therefore the B.t.u. absorbed by each cu. ft. of gas passing through the cycle is

$$\text{B.t.u.}=\frac{H-h}{\frac{1}{D_s}}=D_s\ (H-h)$$

Capacity in tons refrigeration is

$$C=\frac{D^2\times.7854\times S\times N\times V_e\times D_s\ (H-h)}{1728\times200}\qquad\text{Form 95A}$$

Many times tables are given showing the number of cu. in. displacement of piston, or the cu. in. of gas discharged per minute that will equal one ton of refrigeration . This value will change for every change of head or suction pressure or difference of clearance volume, and cannot be relied on to give accurate results unless the variables are taken into account.

By formula 92 B.

$$V_d=\frac{D^2\times.7854\times S\times N\times V_e}{1728}$$

we can then substitute this value for "V_d" in the capacity formula 94 C and get this,

$$C=\frac{V_d\times D_s\ (H-h)}{200}$$

Solving this for the value of "V_d" we will get the number of cu. ft. of gas discharged per minute for one ton of refrigeration.

$$V_d=\frac{200\times C}{D_s\ (H-h)}$$

This multiplied by 1728, will give the number of cu. in. discharged by the compressor per minute, for one ton of refrigeration.

* * *

Cubic feet of piston displacement per minute that will equal one ton of refrigeration. The volumetric efficiency must be known.

By formula 91C

$$V_c=\frac{D^2\times.7854\times S\times N}{1728}$$

Substituting this value into formula 95A we get,

$$C=\frac{D^2\times.7854\times S\times N\times V_e\times D_s\ (H-h)}{1728\times200}$$

$$C=\frac{V_c\times V_e\times D_s\ (H-h)}{200}$$

Solving this for "V_c" we get,

$$V_c=\frac{200\times C}{V_e\times D_s\ (H-h)}$$

One ton of refrigeration requires that heat be absorbed at the rate of 200 B.t.u. per minute for 24 hours. To absorb 200 B.t.u. per minute requires

$$W=\frac{200}{H-h}\qquad\text{lbs. of refrigerant per minute}$$

The volume of this weight of refrigerant is,

$$V_s=W\times\frac{1}{D_s}=\frac{W}{D_s}$$

This is the volume of gas at suction pressure that must be drawn into the compressor in one minute and represents the volume of gas compressed and discharged per minute. As the cylinder does not discharge a volume equal to the piston displacement, it is evident that the cylinder will have to be larger than this volume of gas in the above formula.

Manual to Be Published In Book Form

The article in this issue is part of a series which started in the Jan. 1, 1936, issue of Electric Refrigeration News. The information presented in these articles will be offered about May 1 in book form under the title The Refrigeration Engineers Manual. Price of the book will be $3 per copy.

The preceding four chapters have covered principles of refrigeration, refrigerants, functions of compressors, pistons, suction and discharge valves, theory of the compression of gases, factors determining compressor selection.

The volume of cylinder will have to be (form 96C):

$$V_c=\frac{V_s}{V_e}=\frac{W}{D_s\times V_e}=\frac{200}{(H-h)\times D_s\times V_e}$$

The volume of piston displacement by formula 91C is

$$V_c=\frac{D^2\times.7854\times S\times N}{1728}$$

As formulas 91C and 96C are both equal to V_c, we can set these two equal to each other as,

$$\frac{D^2\times.7854\times S\times N}{1728}=\frac{200}{D_s\times(H-h)\times V_e}$$

Solving these two for D, we can find the diameter of the cylinder when the stroke and r.p.m. is given thus

$$D=\sqrt[2]{\frac{200\times1728}{D_s(H-h)\times V_e\times.7854\times S\times N}}$$

As (S×N)÷12 is equal to the piston speed, we can find the diameter of the cylinder when the piston speed is given instead of the stroke and r.p.m.

$$D=\sqrt[2]{\frac{200\times1728}{D_s(H-h)\times V_e\times.7854\times P_s}}$$

If the r.p.m. and the ratio of stroke to diameter of cylinder is given, we can find the diameter of cylinder by changing formula 91C thus, let the stroke be 1.2 times the diameter.

$$V_c=\frac{D^2\times.7854\times S\times N}{1728}\qquad S=1.2\times D\quad N=2\times\text{r.p.m.}$$

$$V_c=\frac{D^2\times.7854\times1.2D\times2\text{r.p.m.}}{1728}$$

$$V_c=\frac{D^3\times.7854\times1.2\times2\text{r.p.m.}}{1728}$$

Solving for D we get,

$$D=\sqrt[3]{\frac{1728\times V_c}{.7854\times1.2\times2\text{r.p.m.}}}$$

The values that are constant, 1728, .7854, 1.2, and 2 can be combined into one value and simplify the formula thus:

$$\frac{1728}{.7854\times1.2\times2}=916.7\qquad\sqrt[3]{916.7}=9.714$$

This is the value of the constants as long as the ratio of the stroke to the diameter of the cylinder is 1.2. The simplified formula is,

$$D=\sqrt[3]{\frac{916.7\times V_c}{\text{r.p.m.}}}=9.714\sqrt[3]{\frac{V_s}{\text{r.p.m.}}}$$

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